

Service Manual

**ORDER NO.
CRT 1267**

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRONIC TUNER

KEH-6101B

X1B

- This additional service manual is designed to be used together with Model KEH-6100B/EW Service Manual (CRT1255). Refer to it for finding parts numbers and circuit description, etc. which are not shown in this manual.

PACKING METHOD

Parts List (Page 60)

Mark	No.	Description	KEH-6100B/EW Part No.	KEH-6101B/X1B Part No.
	1	Carton	CHG1687	CHG1721
	2	Owner's Manual	CRD1321	CRD1327
		Installation Manual	CRD1323	.....
	3	Styrofoam	CHP1258	CHP1264
	4	Styrofoam	CHP1257	CHP1263
	5	Cover	CEG-236	CEG-173
	6	Accessory Assy	CEA1471	CEA1488
	6-3	Strap	CNF-111
	6-6	Bracket	CNF-975

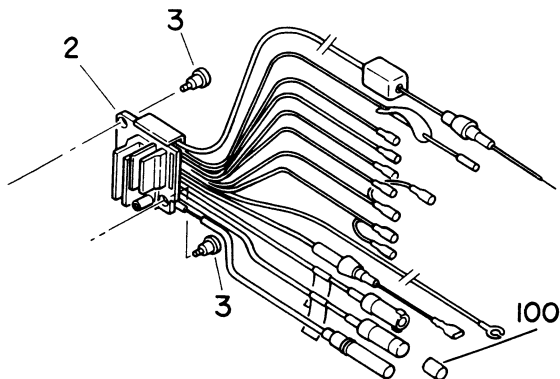
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- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

EXPLODED VIEW

Parts List (Page 56)

NSP:No Spare Part

Mark	No.	Description	KEH-6100B/EW Part No.	KEH-6101B/X1B Part No.
●	1	Box	CNB1289	CNB1331
	2	Cord Assy	CDE2242	CDE2535
	6	Tuner Amp Unit	CWM2088	CWM2089
	8	Heat Sink	NSP	NSP
	27	Grille Unit	CXA3139	CXA3141
●	36	Quick Release Handle Assy	CXA3186	CXA3315
	42	Handle	CNC3016	CNC3197
	61	Insulator	NSP	NSP
	62	Cord Assy	CDE2508	CDE2826
●	66	Case	NSP	NSP
	67	Insulator	NSP	NSP
	78	Insulator	NSP	NSP
●	84	FM/AM Tuner Unit	CWE1167	CWE1182
●	90	Key Board Unit	CWM2190	CWM2106
	100	Cap	.....	CNV1455



Service Manual

PIONEER
The future of sound and vision.

• KEH-6100SDK



ORDER NO.
CRT 1255

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRONIC TUNER

KEH-6100SDK

WG

KEH-6100B

EW

KEH-5100SDK

WG

KEH-5100B

EW

KEH-5101B

EW

Note:

- See the separate manual CX-166 (CRT1094) for the cassette mechanism description.
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SAFETY INFORMATION

WARNING!

Lithium batteries. Danger of explosion. Replacement must be done by qualified personnel and only by following the instructions given in the service manual.

This warning is stated on the product or in the operating instructions. When replacing the lithium batteries, follow the note below.

Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.

The battery used in this device may present a fire or chemical hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate. Replace only with the same Part Number. Use of another battery may present a risk of fire or explosion.

Note: The lithium battery installation position is shown in the exploded view and the P.C. board pattern.

ADVARSEL!

Lithiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Denne advarsel er angivet på produktet eller i brugsvejledningen. Ved udskiftning af lithium batterierne følges nedenstående anvisning.

Batterierne må kun udskiftes med batterier af samme type og mærke.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Denna varning finns på apparaten eller i bruksanvisningen. Följ nedanstående anvisningar vid byte av litiumbatterier.

Batterierna får endast bytas ut mot litiumbatterier av samma typ och fabrikat.

1. DISASSEMBLY

• Quick Release Handle Assy

1. Remove two screws.
2. Remove quick release handle assy.

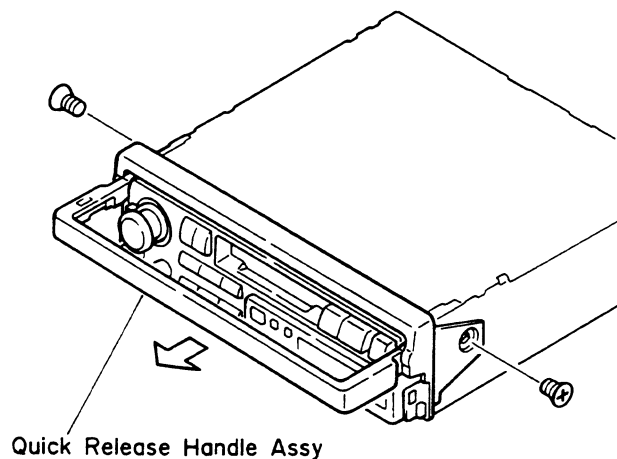


Fig. 1

- **Case**

1. Insert and turn a flat screwdriver to remove case.
2. Raise case to remove.

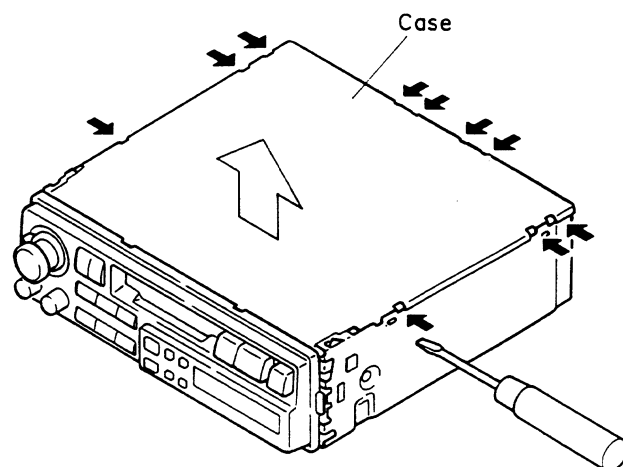


Fig. 2

- **Grille Assy**

1. Remove four knobs.
2. Press tabs at three locations indicated by arrows, and pull out grille assy.

- **Cassette Mechanism Assy**

1. Disconnect two connectors.
2. Remove four screws, and then remove cassette mechanism assy.

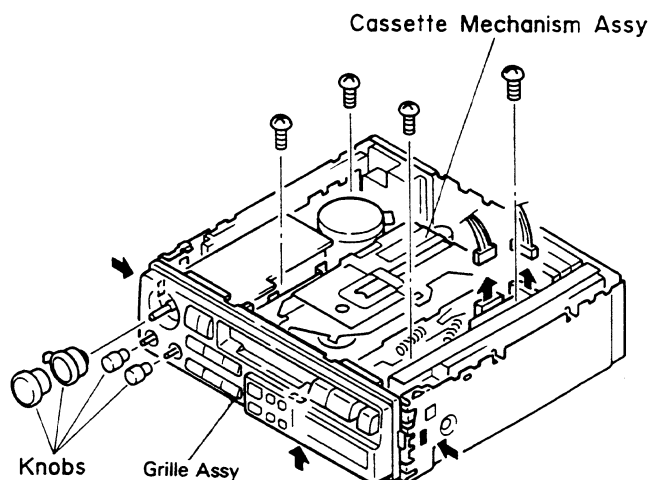


Fig. 3

- **Chassis Unit**

1. Remove two screws A and five screws B.
2. Unbend tab at location indicated by arrow.
3. Raise up on tuner amp unit to remove it from chassis unit. At this time, disconnect cord from chassis unit.

Note:

When replacing the cord assy after it has been removed, apply some paint to screw after screwing it in to prevent it from loosening.

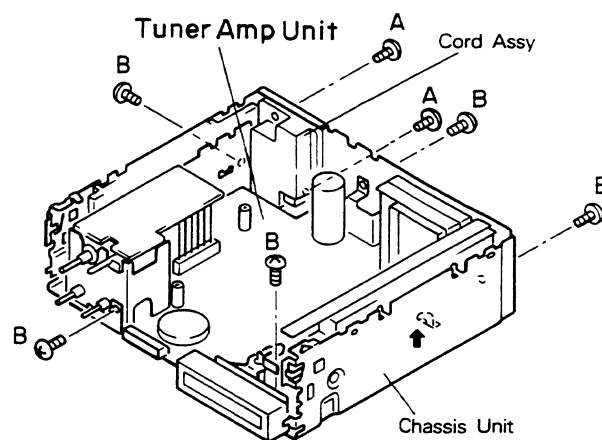


Fig. 4

2. USING THE TAPE DECK

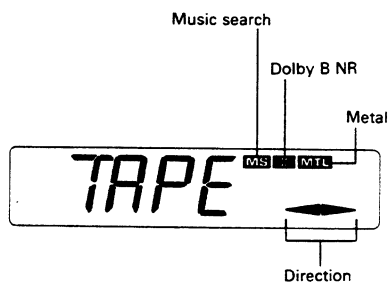
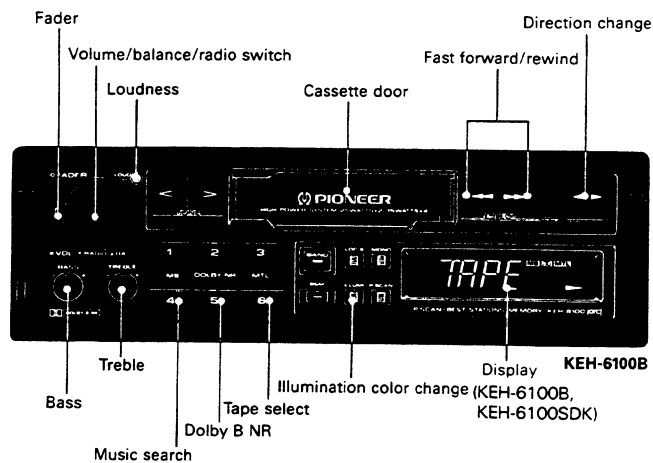


Fig. 5

• Before attempting operation...

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.
- 1. Insert a tape into the deck to turn the power on and automatically begin playback. Even if the radio is on, the unit will automatically switch to and begin tape playback.
- 2. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
- 3. Adjust the tone.
- 4. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, simultaneously press the fast forward and rewind buttons.
- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.
- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.

• Fast Forward/Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons can be regarded as fast forward/rewind buttons.

For fast forward, press the high-speed tape transport button that corresponds to the direction that is shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse).

For rewind, press the button that is opposite that of the direction shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

Fast forward and rewind can be terminated by pressing the respective opposite high-speed tape transport button.

• Direction Change Button

This button is used to switch from one side of the tape to the other (from Side A to Side B or vice versa).

• Dolby B NR Switch

Press when playing a tape recorded with Dolby NR.

• Tape Select Switch

This switch is used to switch to the proper mode for the tape being used and should be depressed when using chrome or metal tapes.

Music Search

• Returning to the beginning of selection A

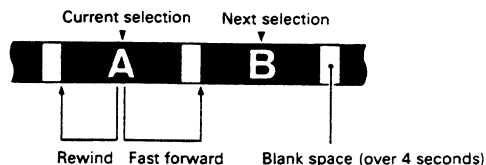
Press the music search button and then the high-speed tape transport button for the direction opposite that shown by the direction indicator. Playback will automatically start from the beginning of selection A.

• Moving from selection A to selection B

Press the music search button and then the high-speed tape transport button that corresponds to the direction shown by the direction indicator. Playback will automatically start from the beginning of selection B.

To enable regular fast forward/rewind operations, press the music search button again to turn the function OFF. The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded "blank" portions between selections is less than 4 seconds — the blank portion cannot be detected by the unit.
- Pauses in recorded conversations are longer than 4 seconds — the unit reads these as blanks between selections.
- Portions are recorded at very low volume for more than 4 seconds — the unit reads these as blanks between selections.



3. USING THE RADIO

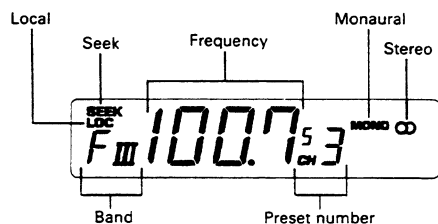
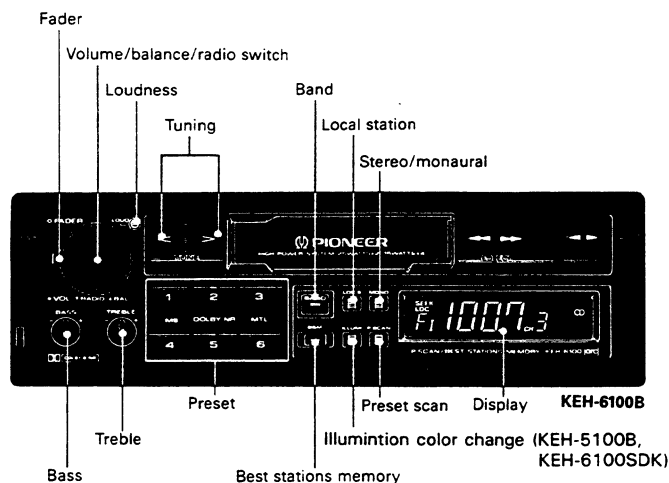


Fig. 6

● Before attempting operation...

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.
- 1. Press the radio switch to turn on power and display the frequency.
- 2. Press the band switch to select the band.
- Switching between FM and MW/LW is controlled by the band switch. Switching between LW and MW is accomplished using the tuning button. The MW band is from 531 kHz to 1,602 kHz, and the LW band is from 153 kHz to 281 kHz.
- 3. Press both ends of tuning button and the seek tuning indicator will appear on the display.
- 4. Press either the left or right side of the tuning button to tune in the desired frequency. (Pressing the right side will increase the frequency.)
- 5. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
- 6. Adjust the tone.

● To enter a frequency into the preset memory...

- 7. Hold down one of the preset buttons (1-6) for approximately two seconds. The frequency is stored in memory (assigned to the preset button pressed) once the preset number stops flashing on the display.
- Six FM1 frequencies, six FM2 frequencies, six FM3 frequencies and six MW and LW frequencies can be entered.

● Best Stations Memory Button

Automatically tunes strong frequencies and assigns them to preset buttons 1 through 6 for one-touch automatic tuning. The best stations memory function is activated by pressing this button for approximately 2 seconds. The best stations memory function is indicated by ——— flashing on the display, and this function can be canceled by pressing the band switch. The frequency display returns once the best stations memory function is complete. The frequency displayed at this time is of the strongest station assigned to preset button 1 by the best stations memory function.

- 6 best (strongest) frequencies are memorized in the 6 preset buttons in the order of their strength, the strongest one being assigned to preset button 1.
- The frequencies previously assigned to the preset buttons are retained when 6 frequencies cannot be located.
- The best stations memory is in operation while ——— is flashing on the display.

● Stereo/Monaural Switch

This switch is used to change from stereo to monaural for FM broadcasts, and is usually left in the stereo position. When a stereo broadcast is received, the stereo indicator will illuminate. With the "Automatic Reception Control" (ARC) function, stereo broadcasts can always be enjoyed in their optimal reception mode. If excessive noise is present, pressing this switch allows monaural reception of the broadcast.

● Local Station Switch

Pressing this switch increases the seek threshold level so that only relatively strong stations can be tuned in (local indicator will illuminate on the display). Local seek threshold level can be selected among four levels for FM and two levels for MW and LW. Holding this switch down for approximately 2 seconds and then pressing the right side of the tuning button changes the display from L-1, L-2, L-3 to L-4. Pressing the left side of the tuning button changes the display from L-4, L-3, L-2 to L-1. (L-1 and L-2 for MW/LW). The bigger the number, the higher the seek threshold becomes and only relatively strong stations can be tuned in.

● Fader Control

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system. Turning the control upwards decreases the volume of the rear speakers, while turning it downwards decreases the volume of the front speakers. With 2-speaker systems, set this control to a horizontal position.

● Loudness Switch

When playing back a tape or listening to the radio at low volume, the low and high tones are emphasized and more clearly heard by pressing this switch.

Seek Tuning

Press both ends of tuning button and tuning to the next higher or lower broadcast on the band can be accomplished automatically by simply pressing either the right or left side of the tuning button. FM frequencies change in 50 kHz steps while those in the MW and LW bands change in 9 kHz steps.

Preset Scan Tuning

Pressing the preset scan button (CH indicator flashes) causes previously stored frequencies to be tuned in sequentially for eight seconds each. Press again when the desired frequency is tuned in to cancel preset scan tuning.

Preset Tuning

Pressing the preset button instantly tunes in the frequency programmed in the memory for that button.

Manual Tuning

When manual tuning is employed, FM frequencies change in 50 kHz steps, LW frequencies change in 1 kHz steps, and MW frequencies change in 9 kHz steps.

1. Press both ends of tuning button and the seek tuning indicator will disappear from the display.
2. Change the frequency by pressing either the left or right side of the tuning button. Pressing the button once will change the frequency one step (see above). Continuously depressing either side of the button will successively change the frequency at the prescribed step.

Changing Illumination Color (KEH-6100B, KEH-6100SDK)

To change illumination color, press the button Illumination Color Change. Pressing allows change from green to red and vice versa.

Using Input Terminal (KEH-6100B, KEH-6100SDK)

To operate a CD player (sold separately) using this unit, connect the player to Input terminal. Before playing a CD, however, be sure that the cassette tape is ejected and the radio is turned off. "CD" appears on the display when the player is operating.

● Note on LW Band Seek Tuning

The following shows changes in LW BAND broadcast frequency steps enacted by WARC/1979. The underlined italic figures indicate changes.

A. Up to January 1986

155-164-173-182-191-200-209-218-227-236-245-254-263-272-281

B. From February 1986

153-162-171-180-189-200-209-218-227-236-245-254-263-272-281

C. From February 1988

153-162-171-180-189-198-207-216-225-234-245-254-263-272-281

D. From February 1990

153-162-171-180-189-198-207-216-225-234-243-252-261-270-279

The LW BAND SEEK operations of this unit are performed in 9 kHz steps starting from 153 kHz. In the case of C, the first ten frequencies are identical to each station being broadcasted, while the remaining five are shifted (2 kHz each). Consequently, manual tuning (in 1 kHz steps) and seek tuning should be used together to tune in the desired LW broadcast. It is also suggested that your favorite LW stations will be memorized for instant recall.



4. SPECIFICATIONS

General

Power source	14.4 V DC (10.8 — 15.6 V allowable)
Grounding system	Negative type
Max. current consumption	7.0 A
Dimensions (chassis)	180(W) × 50(H) × 150(D) mm
(front face)	188(W) × 58(H) × 13(D) mm
Weight	1.5 kg

Amplifier

Maximum power output (KEH-6100B, KEH-5100B)	25 W × 2/15 W × 4 (EIAJ)
(KEH-5101B)	25 W × 2 (EIAJ)
Continuous power output	11 W × 2
(1% dist. at 1 kHz)	
Load impedance	4 Ω (4 — 8 Ω allowable)
Max. output level/output impedance (pre out) (KEH-6100B, KEH-5101B)	250 mV/1 kΩ
Tone controls (bass)	±10 dB (100 Hz)
(treble)	±10 dB (10 kHz)
Loudness contour	+12 dB (100 Hz), +7 dB (10 kHz)
(volume: -30 dB)	

Tape player

Tape	Compact cassette tape (C-30 — C-90)
Tape speed	4.76 cm/sec. (+0.14 cm/sec., -0.05 cm/sec.)
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.13% (WRMS)
Frequency response (KEH-6100B, KEH-5101B, KEH-5100B)	
.....	Metal: 40 — 17,000 Hz (±3 dB)

Stereo separation	45 dB
Signal-to-noise ratio (KEH-6100B, KEH-5101B, KEH-5100B)	
..... Metal: Dolby B NR IN: 66 dB (IEC-A network)	
Dolby NR OUT: 60 dB (IEC-A network)	

FM tuner

Frequency range	87.5 — 108 MHz
Usable sensitivity	11 dBf (1.0 μV/75 Ω, mono)
50 dB quieting sensitivity	16 dBf (1.7 μV/75 Ω, mono)
Signal-to-noise ratio	70 dB (IEC-A network)
Distortion	0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response	50 — 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range	531 — 1,602 kHz
Usable sensitivity	18 μV (25 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

LW tuner

Frequency range	153 — 281 kHz
Usable sensitivity	30 μV (30 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

5. CONNECTION

2-speaker system

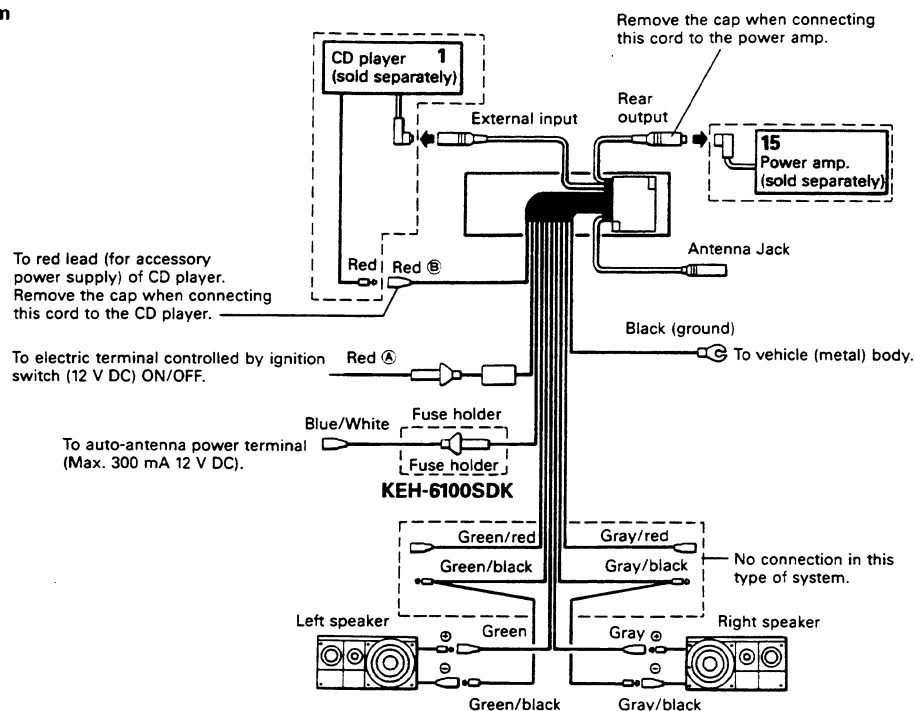


Fig. 7

4-speaker system 1

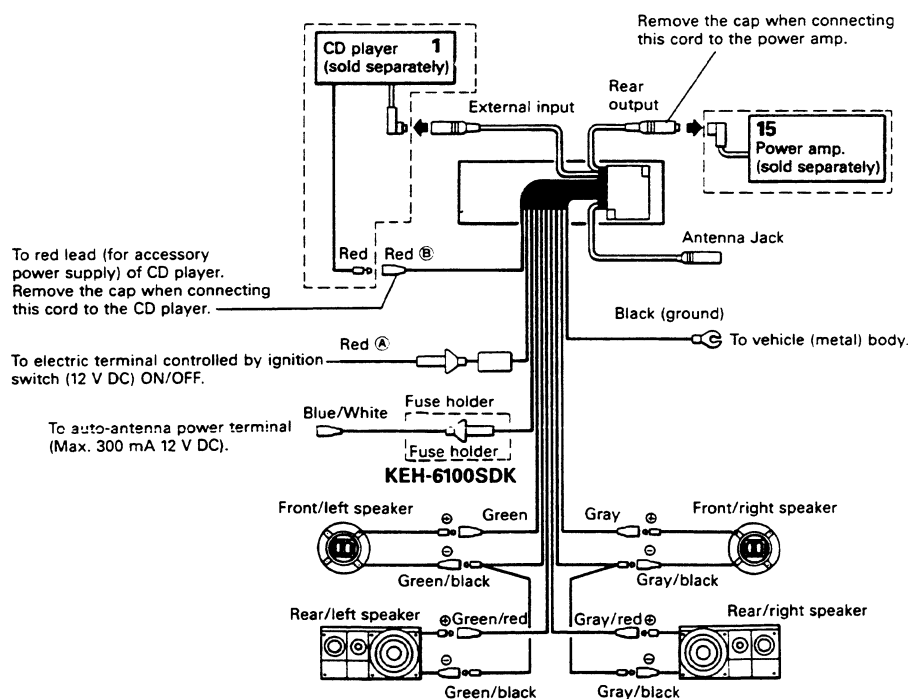


Fig. 8

4-speaker system 2

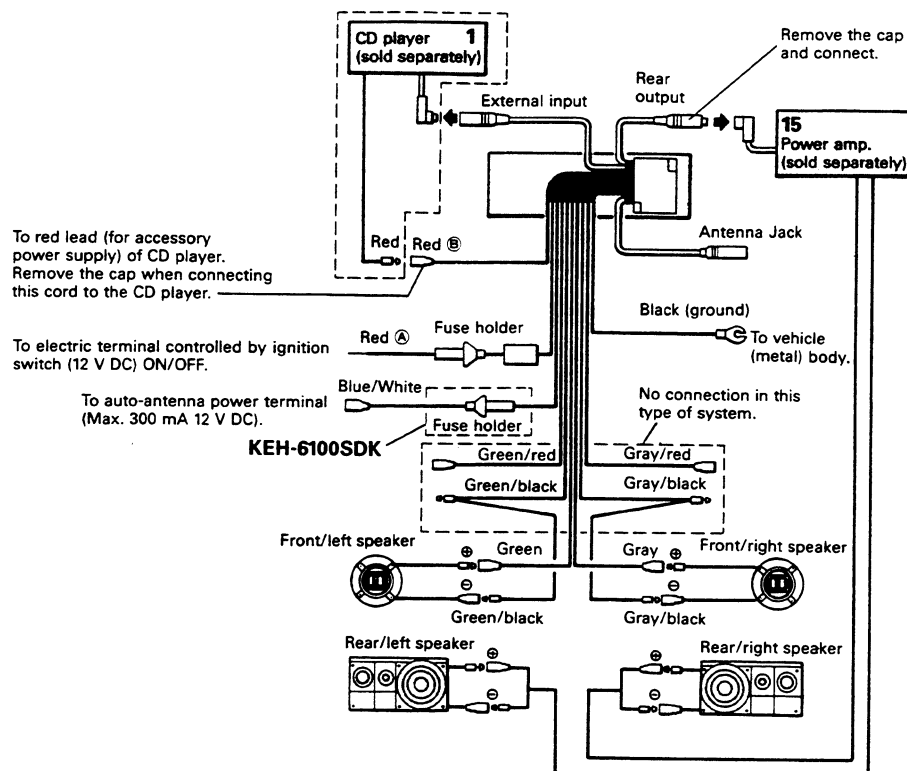


Fig. 9

6. BLOCK DIAGRAM

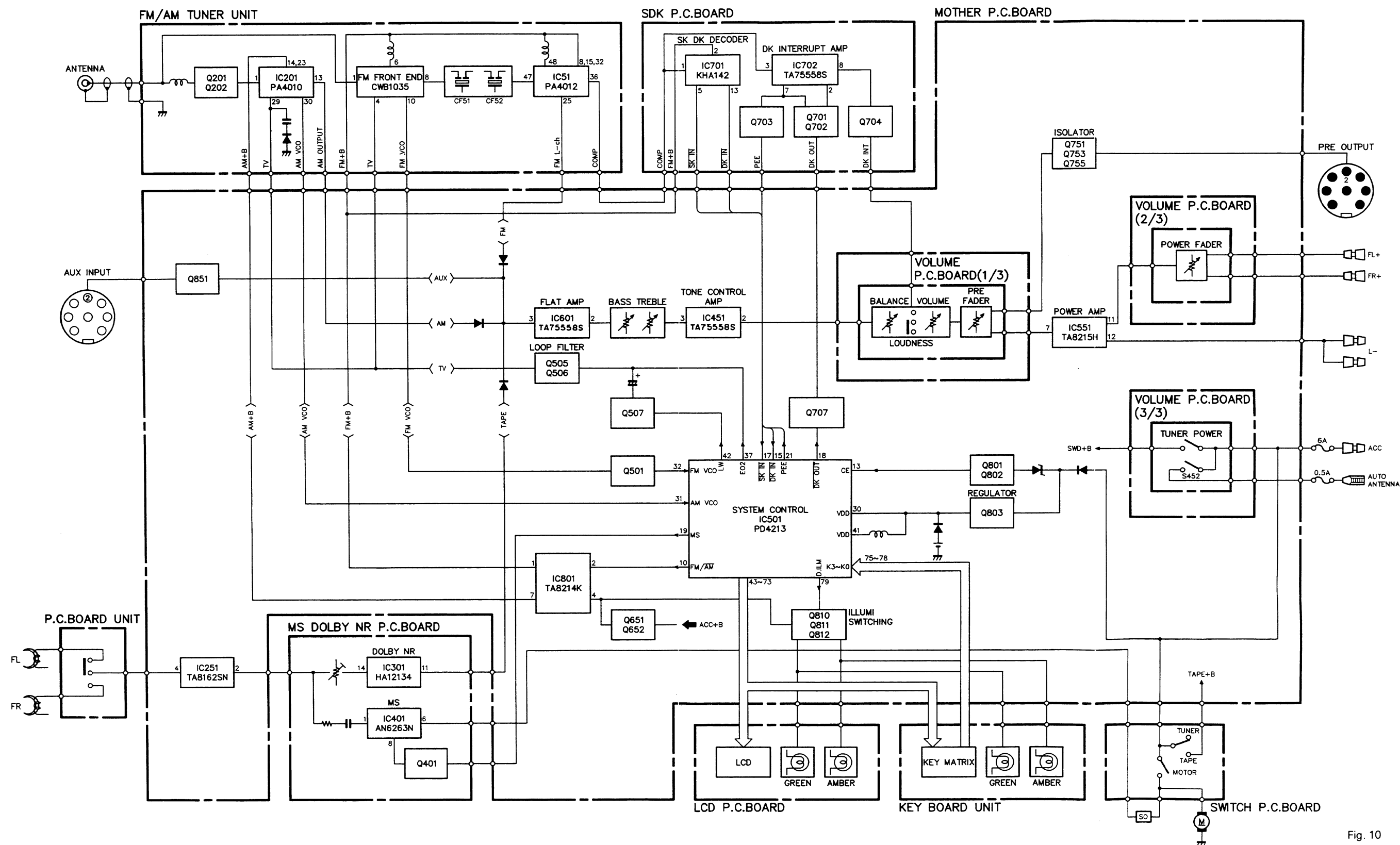


Fig. 10

7. ADJUSTMENT

NOTICE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

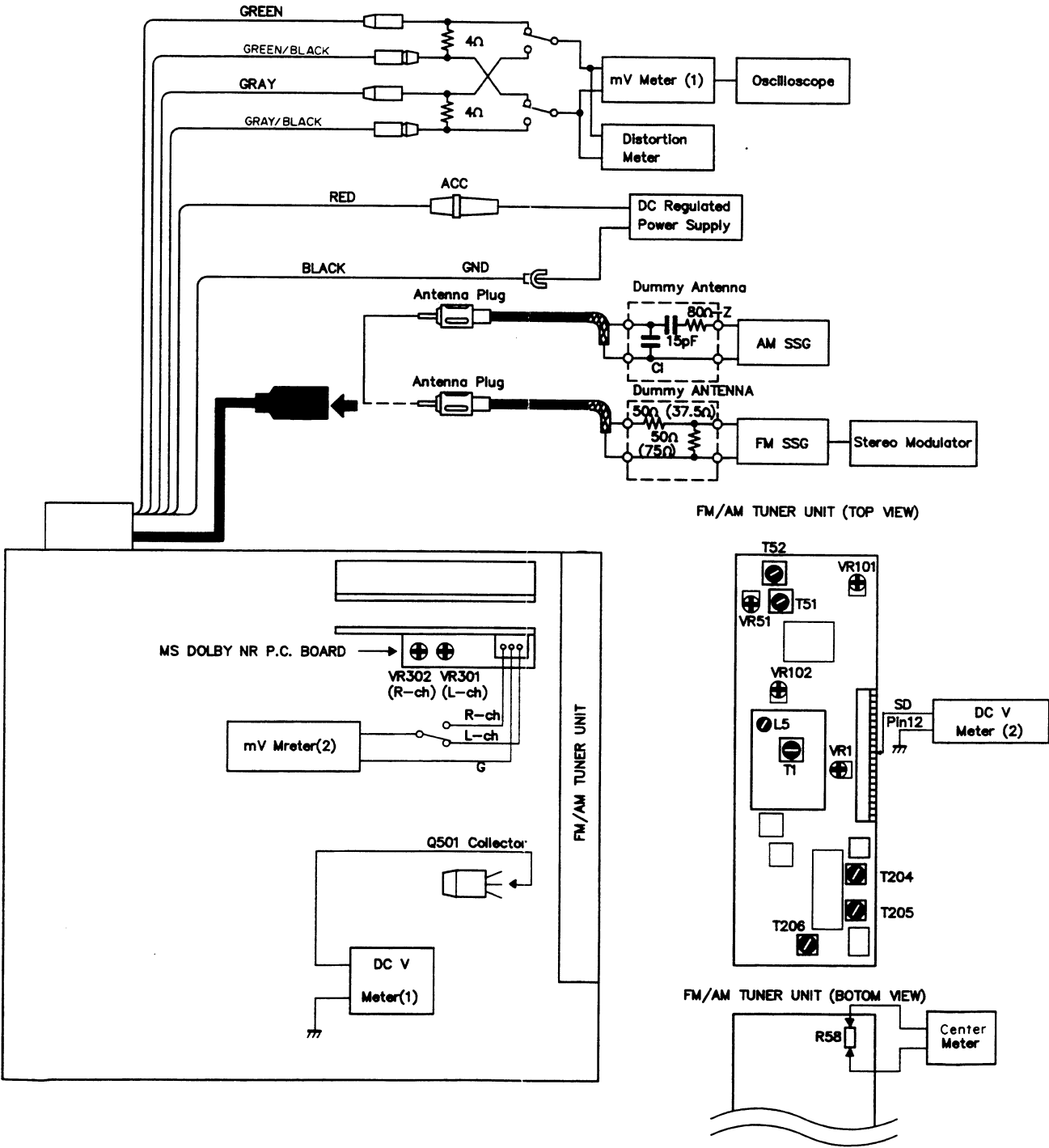


Fig. 11

FM ADJUSTMENT ※ Stereo MOD.: 1kHz, L+R=90% , Pilot=10%

	No.	FM SSG (400Hz, 100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (MHz)	Level (dBμV)			
IF	1	98.1	60	98.1	T51	Center Meter:0
	2	98.1	60	98.1	T52	Distortion Meter:Minimum
	3	Repeat No.1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates minimum output.				
Front End	1			108.0	L5	DC V Meter:6.2±0.2V
	2			87.5	—	Verify that DC V Meter is more than 2.1±0.6V
	3	98.1	8	98.1	T1	Distortion Meter:Minimum
Soft Mute	1	98.1	60	98.1	—	mV Meter (1):A dB
	2	98.1	10	98.1	VR102	mV Meter (1):A-3dB
ARC	1	98.1※	35	98.1	VR101	mV Meter (1):Separation 5dB
SD	1	98.1	17	98.1	VR51	DC V Meter (2):Approx. 5V
	2	98.1	16	98.1	—	Verify that DC V Meter (2) is approx. 0V.
	3	98.1	55	98.1	VR1	DC V Meter (2):Approx. 5V
	4	98.1	54	98.1	—	Verify that DC V Meter (2) is approx. 0V.

MW/LW ADJUSTMENT (WG, EW)

	No.	AM SSG (400Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dB μ V)			
Tuning Volt	1	(MW MODE)		1.602	—	Verify that DC V Meter (1) is less than 6.5V.
	2	(LW MODE)		153	—	Verify that DC V Meter (1) is more than 2.0V.
IF	1	999	20—25	999	T204, 205, 206	mV Meter (1): Maximum

DOLBY NR ADJUSTMENT

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR301 (Lch) VR302 (Rch)	mV Meter (2): -7.2dBs (337mV) (DOLBY NR Switch: OFF) (METAL Switch: OFF)

• ICs and Transistors

2SA1048
2SC2458
2SC3113



2SC3327
2SD1468S



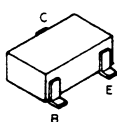
2SB1243



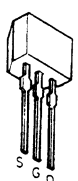
2SC2498



2SA1162
2SC2712
2SC4116



2SK330



2SK435



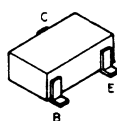
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DTC124ES
DTC124TS



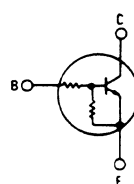
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DTC124EL
DTC314TL



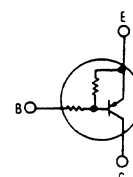
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DTC124EK



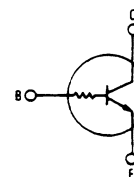
DTC124EL
DTC124ES



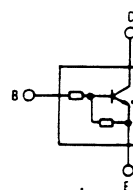
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DTB114ES



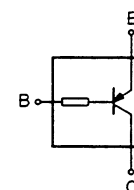
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DTC314TL



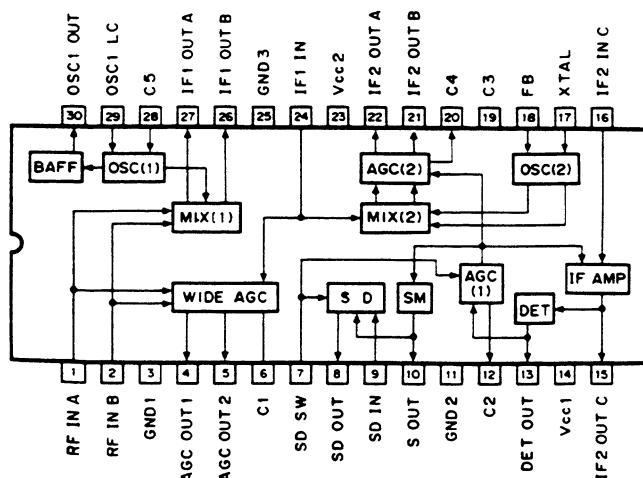
DTC124EK



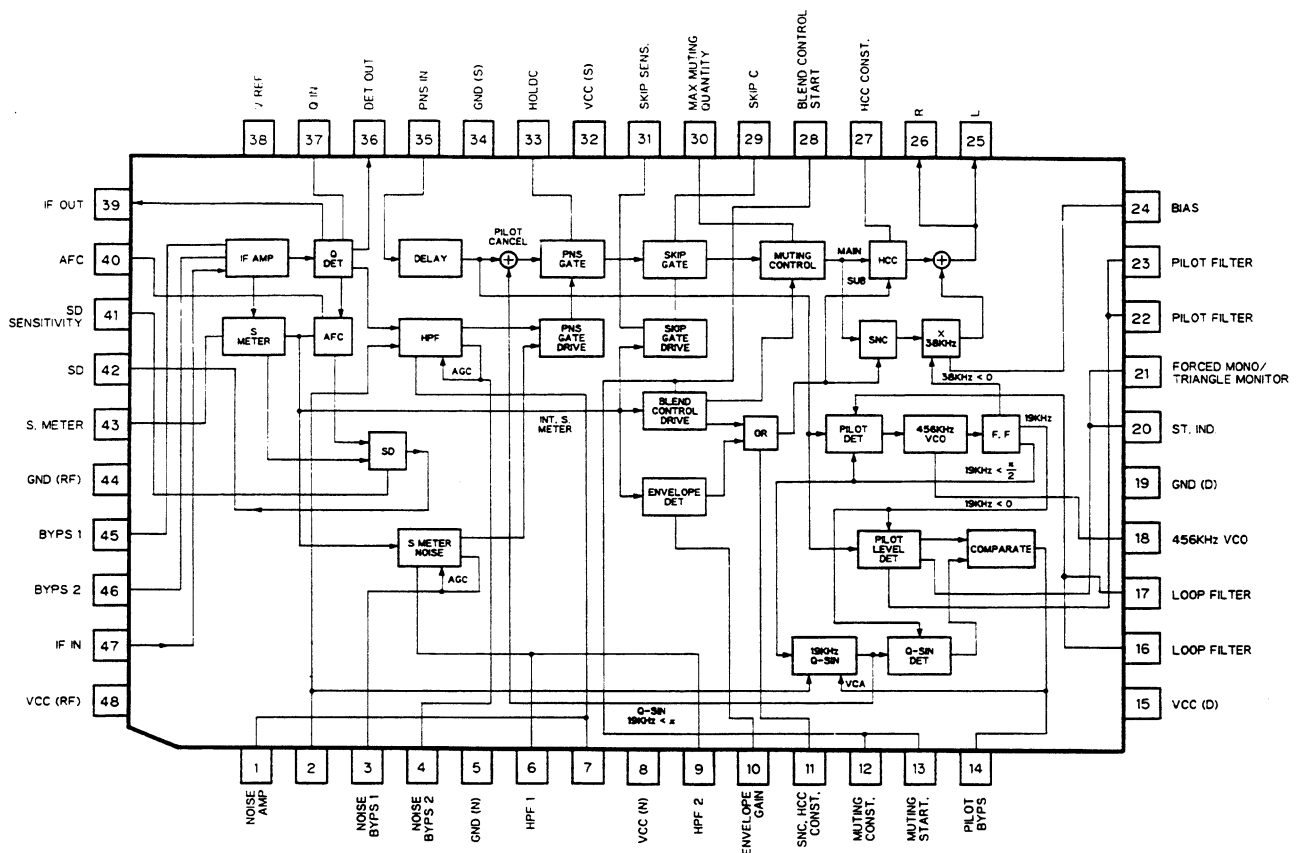
DTA114TK



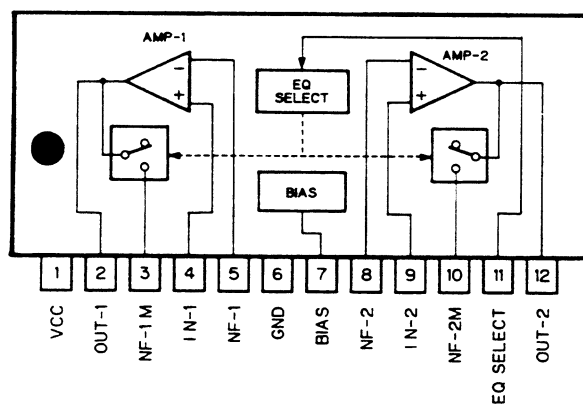
PA4010



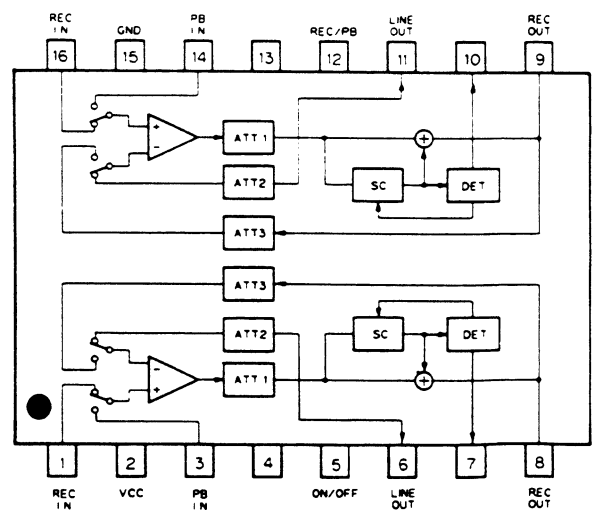
PA4021



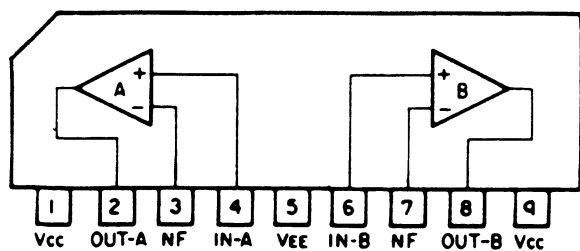
TA8162SN



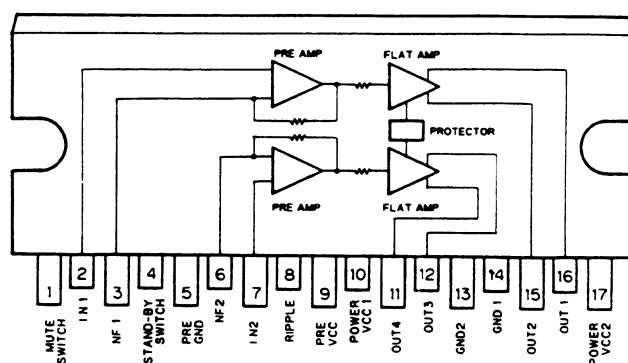
HA12134



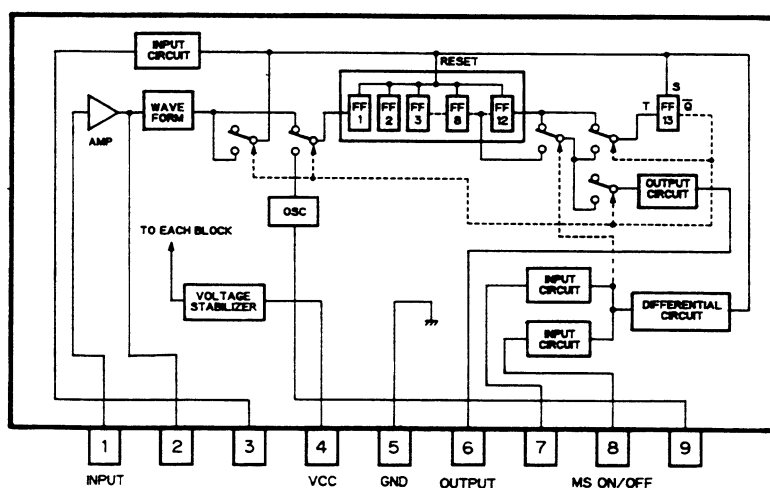
TA75558S



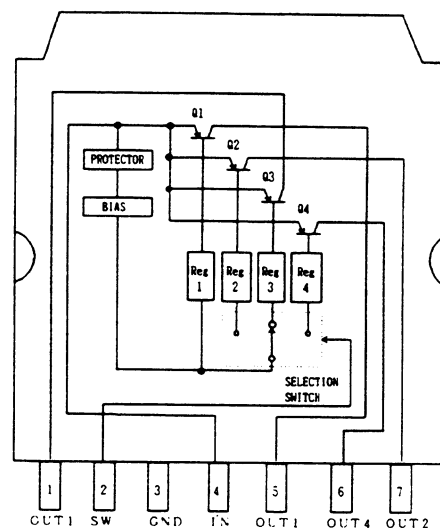
TA8215H



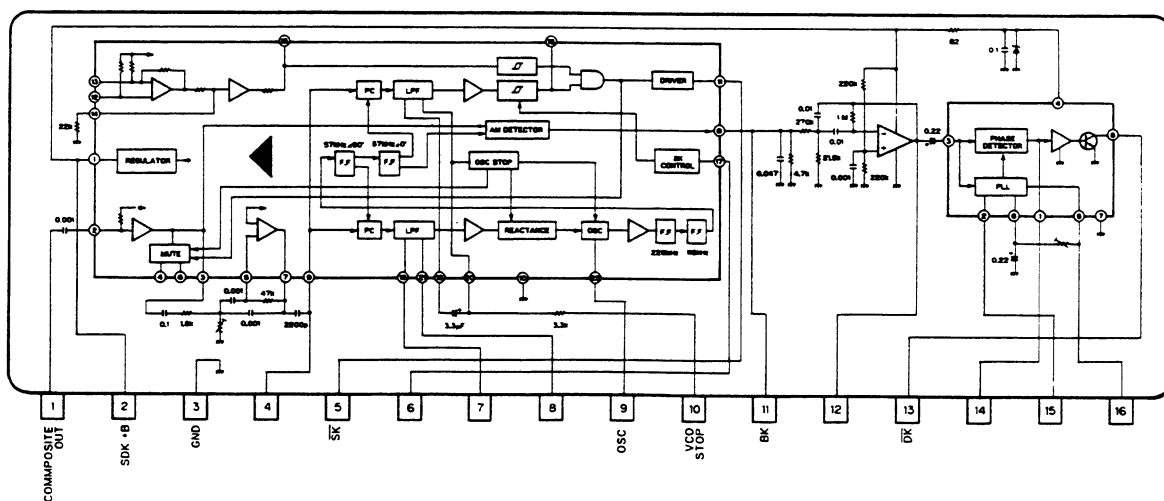
AN6263N



TA8214K



KHA142



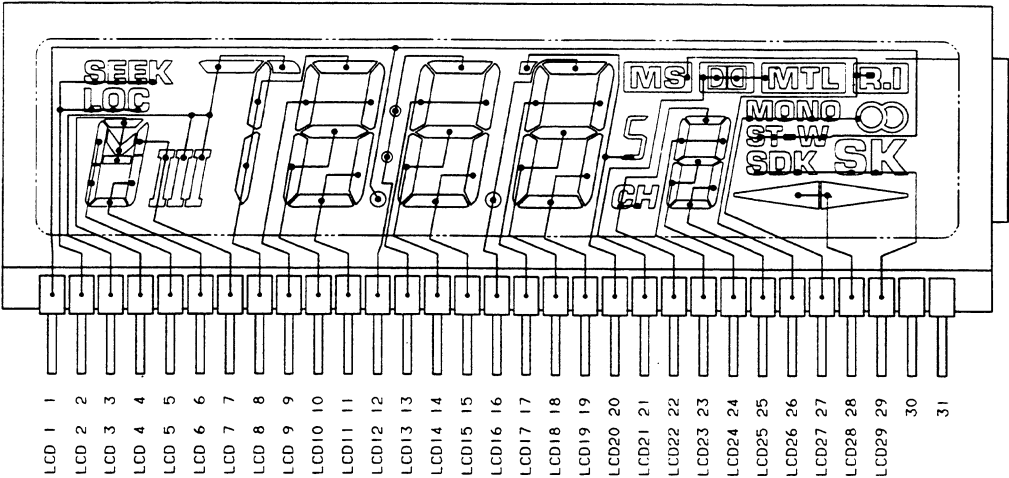
- **Pin Function (PD4213)**

Pin No.	Pin Name	I/O	Function and Operation
1	MONO	Output CMOS	Controlled by MONO key. "H": MONO "L": AUTO
2	MUTE	Output CMOS	Muting signal output. "L": MUTE ON
3	METAL	Output CMOS	Controlled by MTL key. "H": METAL "L": NORMAL
4,5	NC		Not used.
6	CDPOW	Input	CD (AUX) power supply sensor. "L": CD (AUX) power ON
7	NC		Not used.
8	STWID	Output CMOS	Not used.
9	NC		Not used.
10	FM/AM	Output CMOS	Controlled by BAND Button. "H": FM "L": AM
11	TAPOW	Input	Tape power supply sensor. "L": TAPE POWER ON
12	MCMUT	Input	Mech muting input. "L": MUTE ON
13	CE	Input	Device signal input. H level during normal device operation, L level when device is not being used. PLL is in disable status while this terminal is L level. For models without clocks, internal clock and CPU operation is halted while this terminal is L level, and memory is maintained by low demand current (10μA MAX). Change of CE terminal from L to H results in device reset and the program to start from address 0.
14	TUPOW	Input	Tuner power supply sensor. "L": TUNER POWER ON
15	DKIN	Input	Inputs message recognition signal (DK) sent during traffic information broadcast only. Since the DK signal is sent by amplitude modulation of a 57 kHz subcarrier wave by 125 Hz, it counts the input signals in accordance with the program. A DK signal is judged as being preset when 125 Hz is not detected twice consecutively. DK signal is judged as not being preset when 125 Hz is not detected 4 times consecutively. An interrupt operation is performed when a DK signal is judged as being present. This count is only performed in the SDK mode.
16	F/REV	Input	This pin accepts a tape motion signal. When this is H level the "▶" (FWD) indicator lights; when L level, the "◀" (REV) indicator.
17	SK IN	Input	Determines whether traffic information is being broadcast and inputs a broadcast detect signal (SK). Broadcast is detected when input signal is L level, and "SK" indicator is displayed. Besides being used as the SDK mode auto tuning stop signal, SK input controls the SK mode and SK alarm functions.
18	DK OUT	Output N-channel open drain	Controlled by DK IN (terminal #15) input signal. L level output when DK IN input signal is detected as 125 Hz while SK IN (terminal #17) input is L level. Since DK IN measurement operation is only performed in SDK mode, terminal is always H in SDK mode except under above noted conditions.

Pin No.	Pin Name	I/O	Function and Operation																														
19	DOL	Output N channel Open drain	Dolby NR ON/OFF output terminal. While the deck is in operation, the contents of "Dolby ON/OFF memory" is output from this pin. This pin goes H level when Dolby NR is on.																														
20	MS	Output N channel open drain	Controlled by MS key. "H": MS ON																														
21	PEE	Output CMOS	Alarm output terminal. Alarm output when SK in SDK mode remains at H level continuously for more than 30 seconds.																														
22	DMUTE	Output CMOS	Controlled by MCMUT (terminal #12) input signal. "H": DECK MUTE ON																														
23 24	LOC.L LOC.H	Output CMOS	Halt sensitivity switching terminals controlled by LOC and BSM keys. <table><tr><td></td><td>DX-SEEK (PSCN)</td><td>LOC-SEEK</td><td>BSM-L</td><td>BSM-M (AM)</td></tr><tr><td>LOC.H</td><td>L</td><td>L</td><td>L</td><td>L</td></tr><tr><td>LOC.L</td><td>L</td><td>H</td><td>L</td><td>H</td></tr><tr><td></td><td>BSM-H</td><td>During broadcast reception</td><td></td><td></td></tr><tr><td>LOC.H</td><td>H</td><td>L</td><td></td><td></td></tr><tr><td>LOC.L</td><td>H</td><td>L</td><td></td><td></td></tr></table>		DX-SEEK (PSCN)	LOC-SEEK	BSM-L	BSM-M (AM)	LOC.H	L	L	L	L	LOC.L	L	H	L	H		BSM-H	During broadcast reception			LOC.H	H	L			LOC.L	H	L		
	DX-SEEK (PSCN)	LOC-SEEK	BSM-L	BSM-M (AM)																													
LOC.H	L	L	L	L																													
LOC.L	L	H	L	H																													
	BSM-H	During broadcast reception																															
LOC.H	H	L																															
LOC.L	H	L																															
25	SEEK	Output CMOS	"L" level: SEEK, BSM, BSA and PSCN																														
26	S D	Input	Judges whether or not a broadcast is present during auto tuning. A broadcast is judged as being present when H level is input.																														
27	AMIF	Input	MW, LW band intermediate frequency input terminal.																														
28	SL	Input	Station level analog voltage input. Used for broadcast detection in MW, LW band auto tuning.																														
29	ST	Input	Inputs stereo broadcast detection signal. Stereo is detected when input signal is L level, and stereo indicator is displayed. Display is cleared when input signal is at H level. stereo indicator is OFF during mute signal output.																														
30,41	VDD		Device power supply terminal. 5 V ±10% voltage supplied.																														
31	AMVCO	Input	Inputs 0.6–15 MHz (0.3 Vp-p MIN) local oscillator reference frequency (VCO output). This terminal is active when direct division system is selected.																														
32	FM VCO	Input	Inputs 15–150 MHz (0.5 Vp-p MIN) local oscillator reference frequency (VCO output). This terminal is active when swallow counter method is selected.																														
33	GND		GND terminal.																														
34 35	XO XI		Quartz oscillator terminal connection terminal. 4.5 MHz quartz crystal used.																														
36 37	E01 E02	Output CMOS 3 State	PLL error output. H level output by these terminals when division of local oscillator frequency (VCO output) is higher than reference frequency. L level output when lower. This output is applied to a varactor diode, via an external low pass filter. E01 and E02 output identical waveforms.																														
38 ~ 40	NC																																
42	L W	Output CMOS	Loop filter switching output terminal. "H": LW																														
43 44	COM1 COM0	Output CMOS	Common signal to LCD. GND, 1/2VDD, VDD values (5ms interval) output at 100 Hz cycle. Segments between these terminals and LCD0–LCD29 with ± VDD potential difference are lit.																														
45 ~ 74	LCD29 LCD0	Output CMOS	Segment signal output terminal to LCD. LCD display performed using COM0, COM1 matrices.																														
68 ~ 74	KS6 ~ KS0	Output CMOS	Key return signal source output terminal.																														
75 ~ 78	K3 ~ K0	Input	Key matrix input terminal.																														
79	D.ILM	Output CMOS	Controlled by ILLUMI key. "H": RED "L": GREEN																														
80	P.ON	Output CMOS	System power ON/OFF output. "H": SYSTEM POWER ON																														

• LCD (CAW1069)

SEGMENT



COMMON

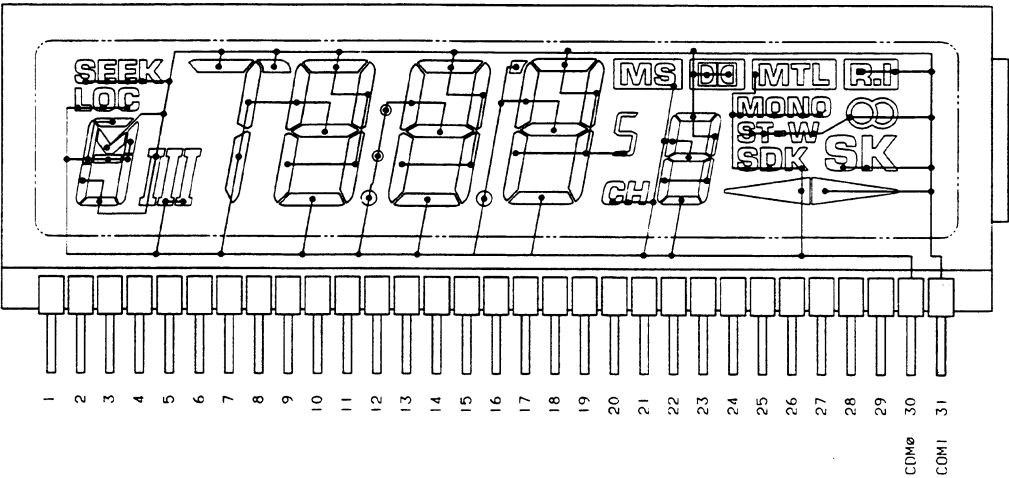


Fig. 12

• Front End Unit (CWB1035)

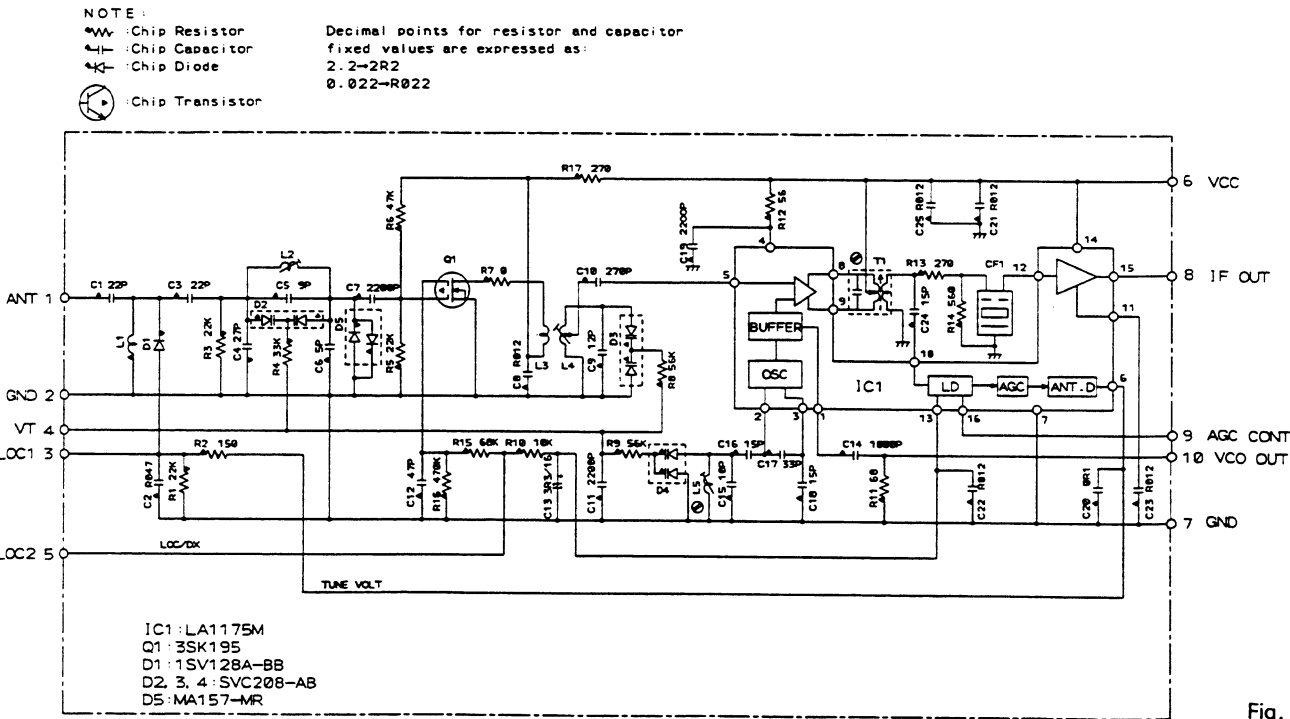


Fig. 13

4

5

6

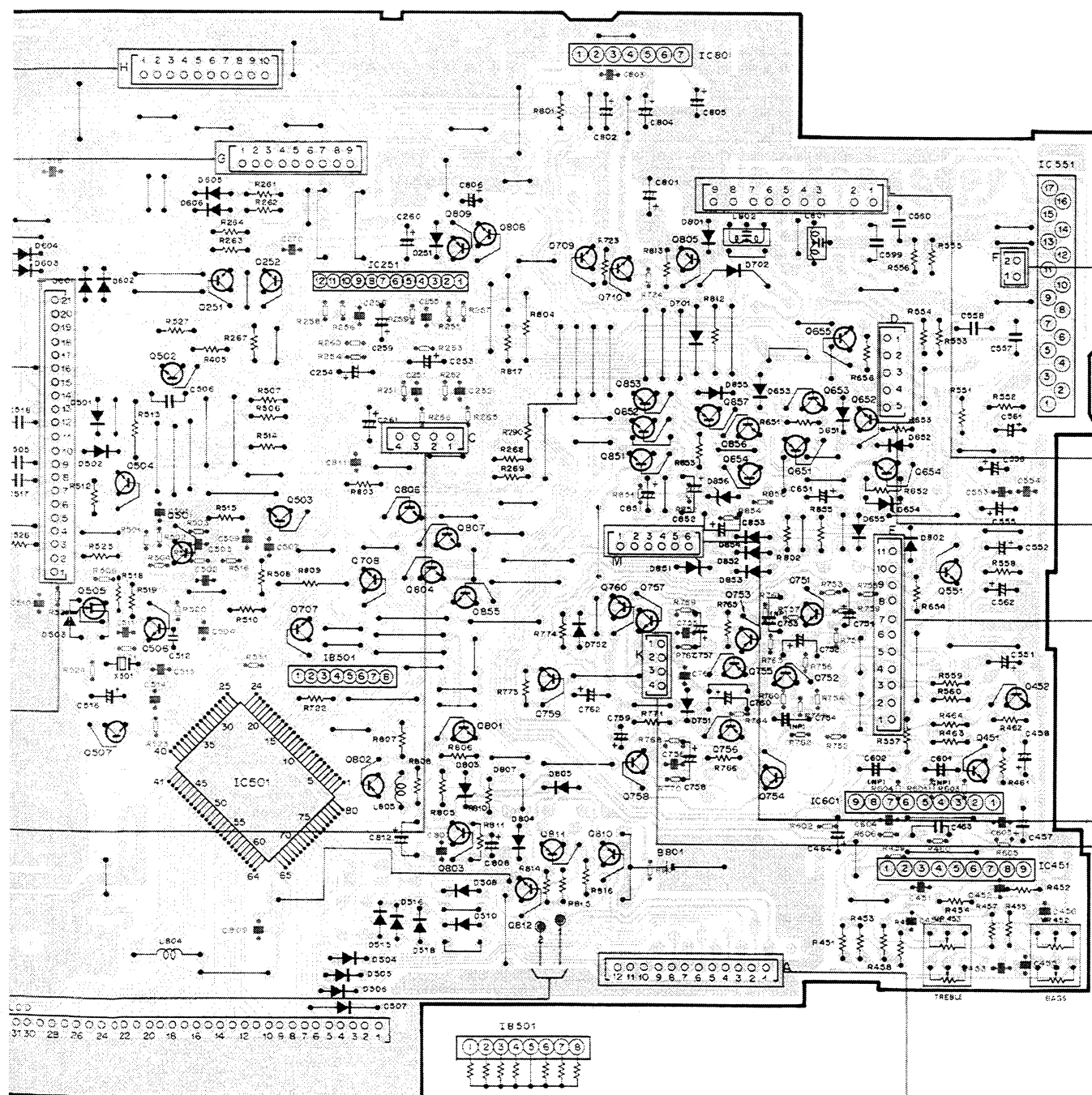
7

8

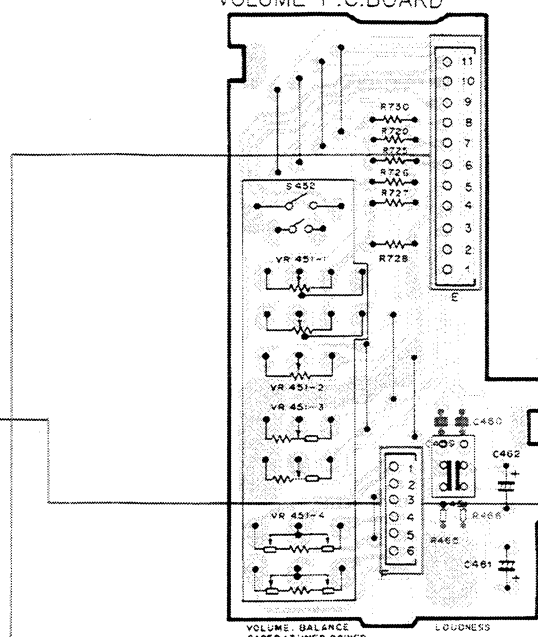
9

HER P.C.BOARD

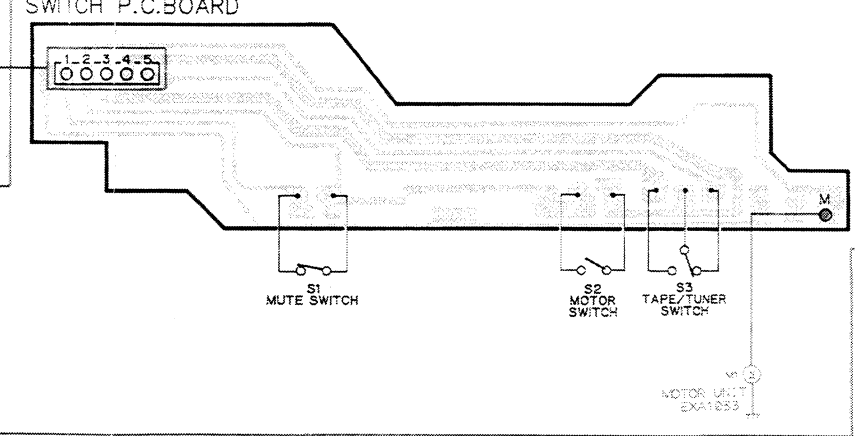
Q505 Q504 Q502 Q251 Q252 IC251 Q806 Q807 Q809 Q808 Q709 Q710 Q853 IC801 Q805 Q856 Q653 Q655
Q708 Q804 Q855 Q759 Q760 Q757 Q852 Q755 Q857 Q854 Q752 Q651 Q652 Q551 Q451 Q452 IC551
Q507 Q506 Q501 IC501 Q503 Q707 Q802 Q801 Q803 Q812 Q811 Q810 Q758 Q851 Q756 Q753 Q754 Q751 Q654 IC601 IC451



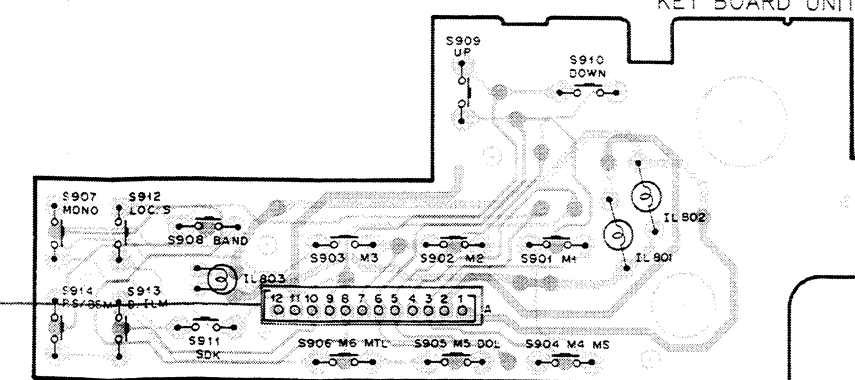
VOLUME P.C.BOARD



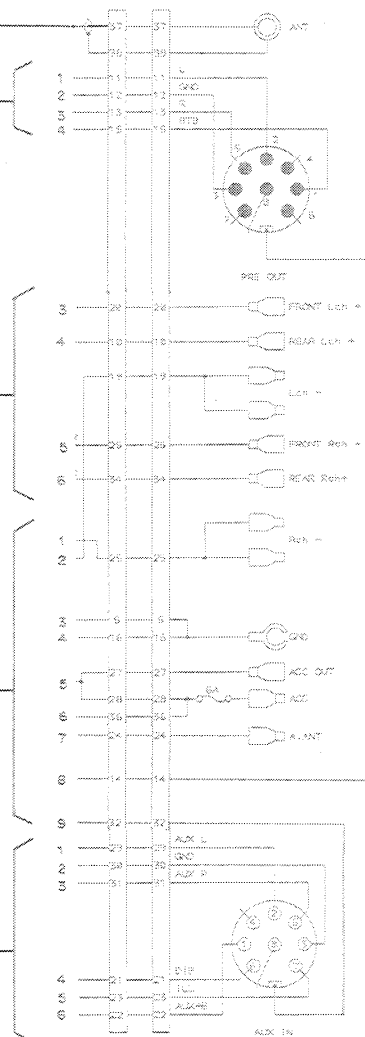
SWITCH P.C.BOARD



KEY BOARD UNIT



TO FM/AM
TUNER UNIT



A

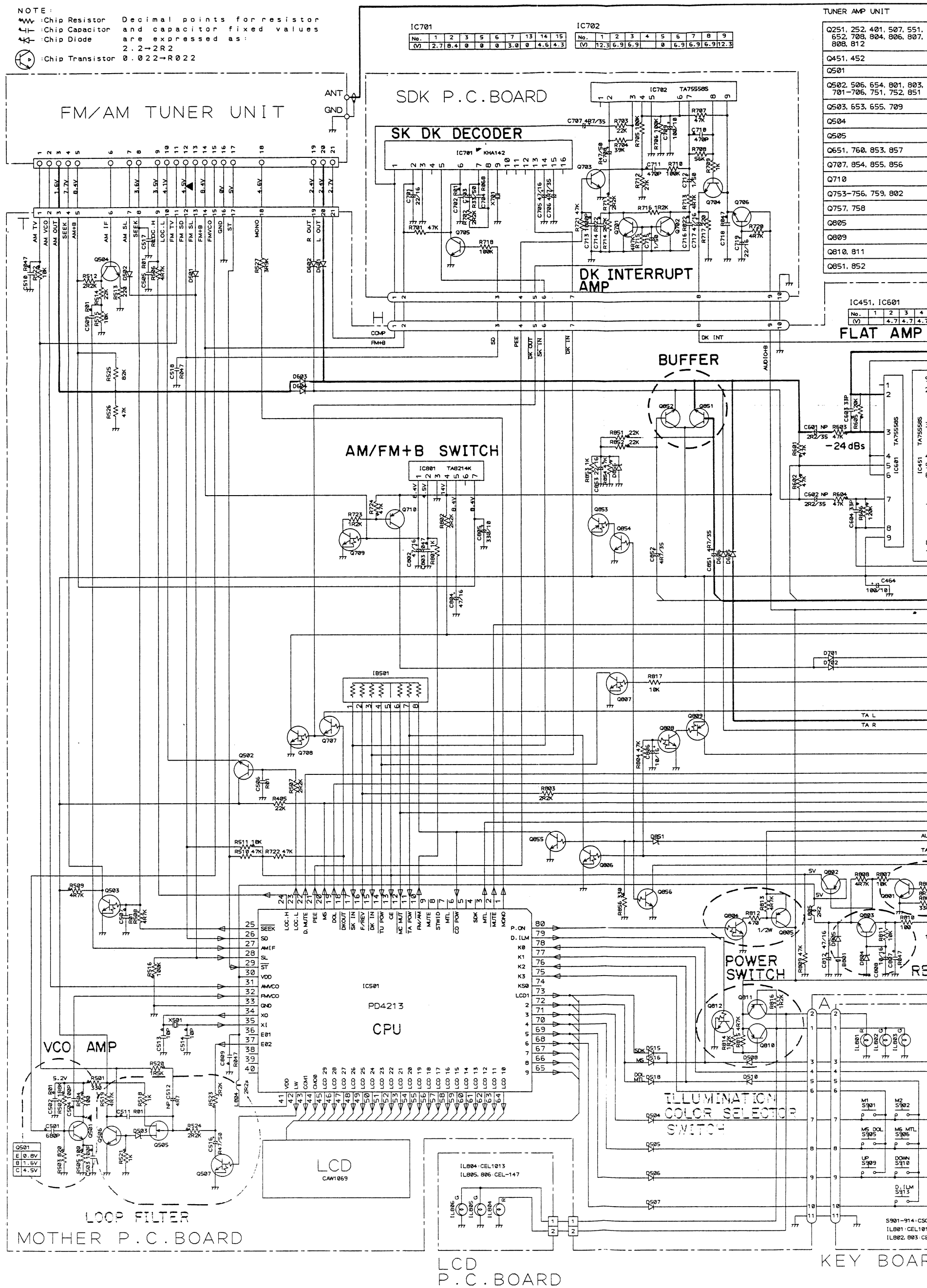
B

C

D

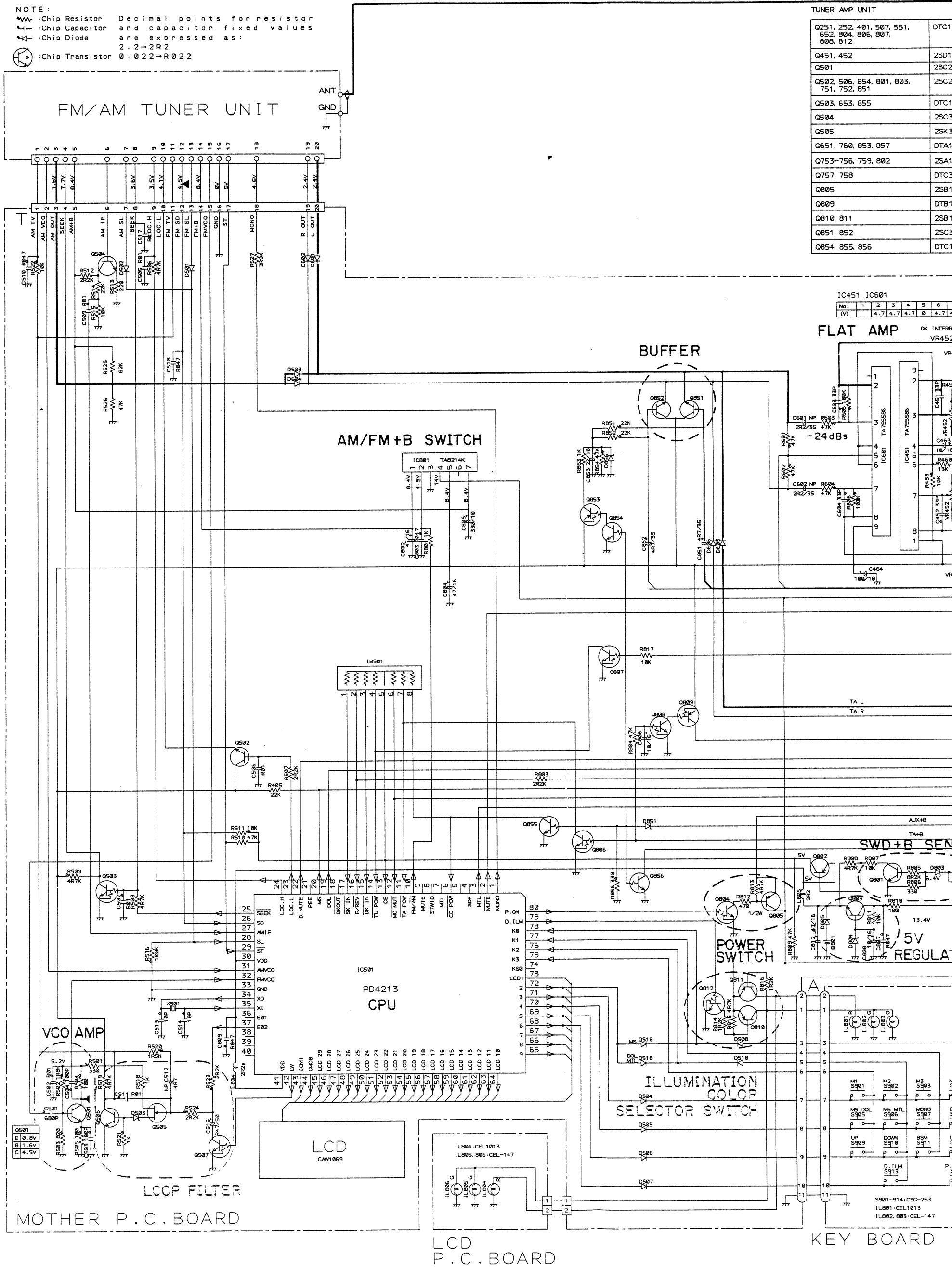
Fig. 14

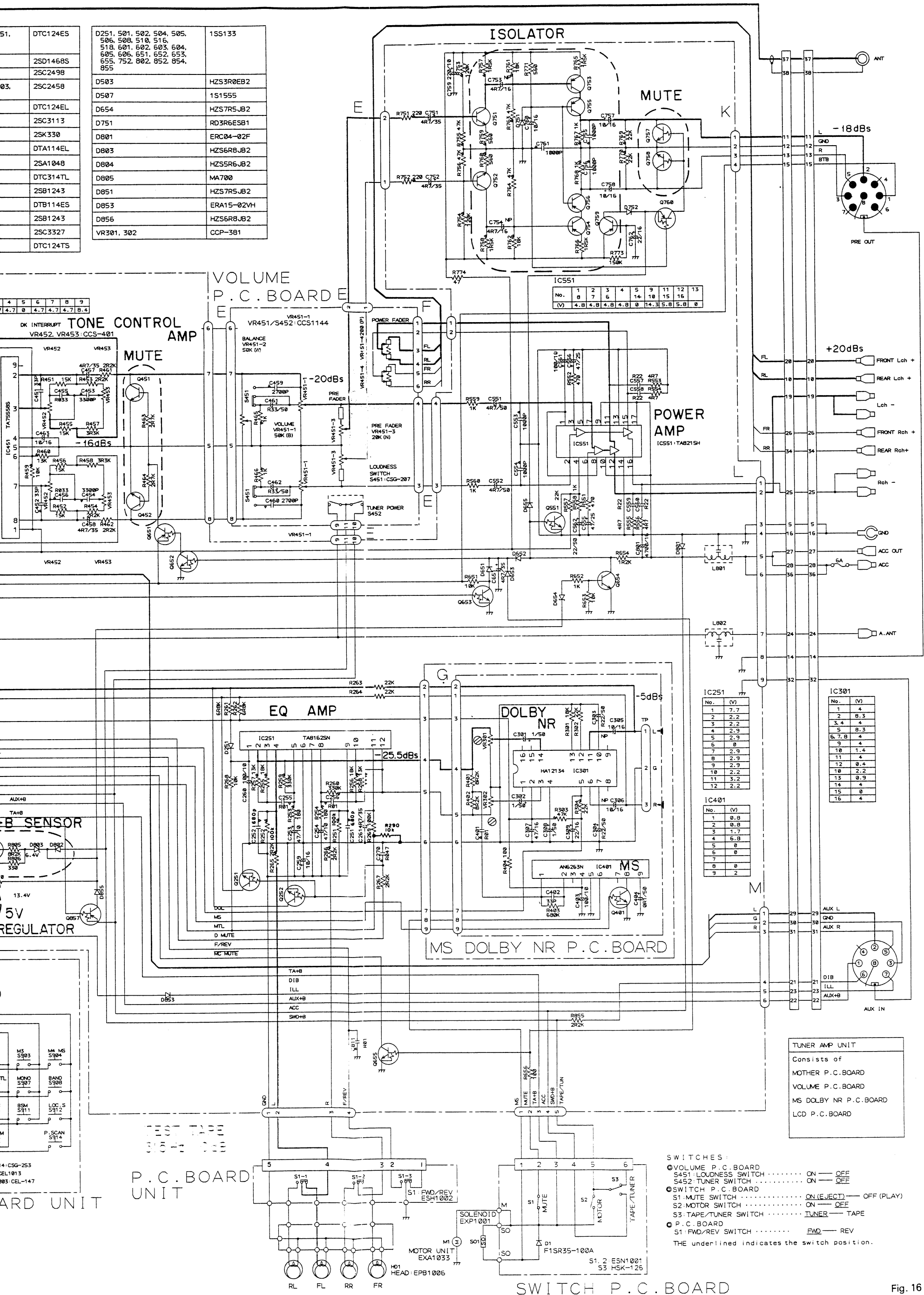
9. SCHEMATIC CIRCUIT DIAGRAM (KEH-6100SDK/WG)



10. SCHEMATIC CIRCUIT DIAGRAM (KEH-6100B/EW)

NOTE:
Chip Resistor Decimal points for resistor
Chip Capacitor and capacitor fixed values
Chip Diode are expressed as:
Chip Transistor 2.2→2R2
 0.022→R022





A
B
C
D
E
F

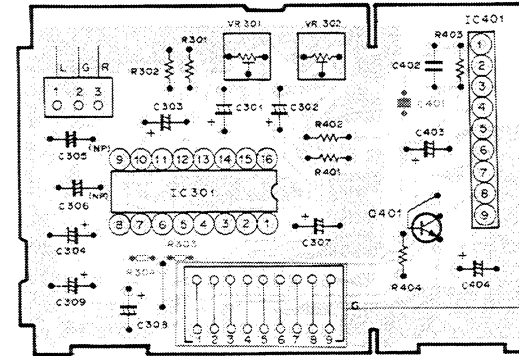
Fig. 16

11. CONNECTION DIAGRAM (KEH-6100B/EW)

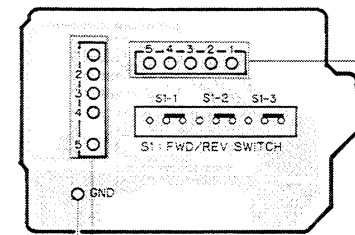
VOLUME P.C.

IC301 VR301 VR302 Q401 IC401

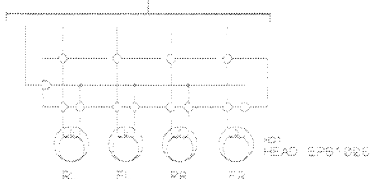
SDK P.C.BOARD



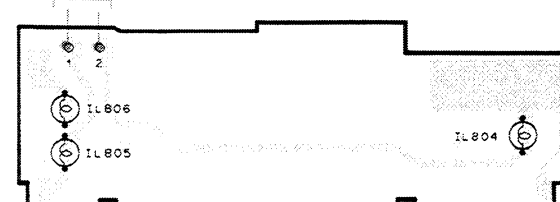
PC BOARD UNIT



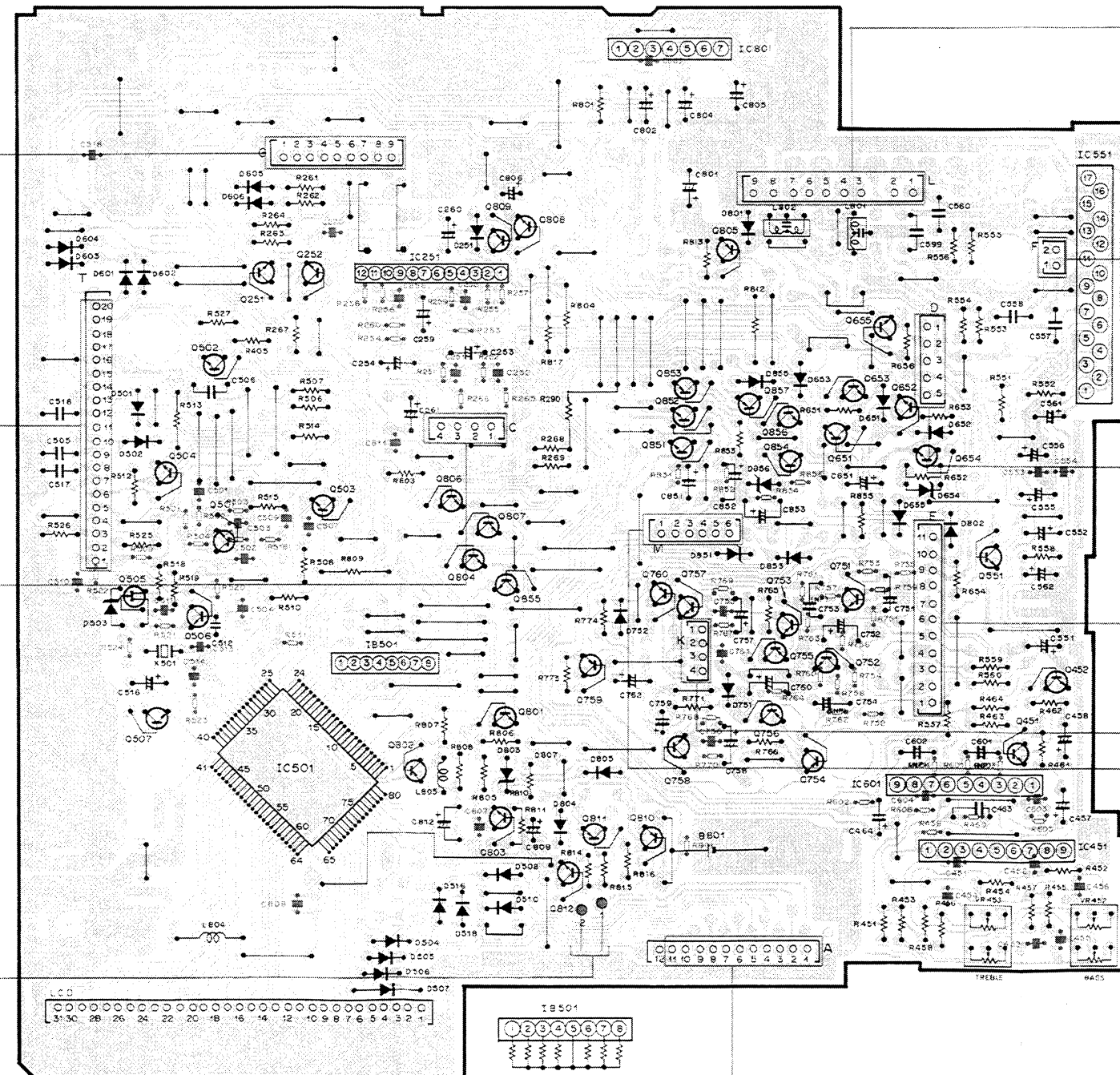
TO FM/AM
TUNER UNIT



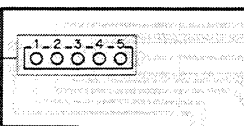
LCD P.C.BOARD



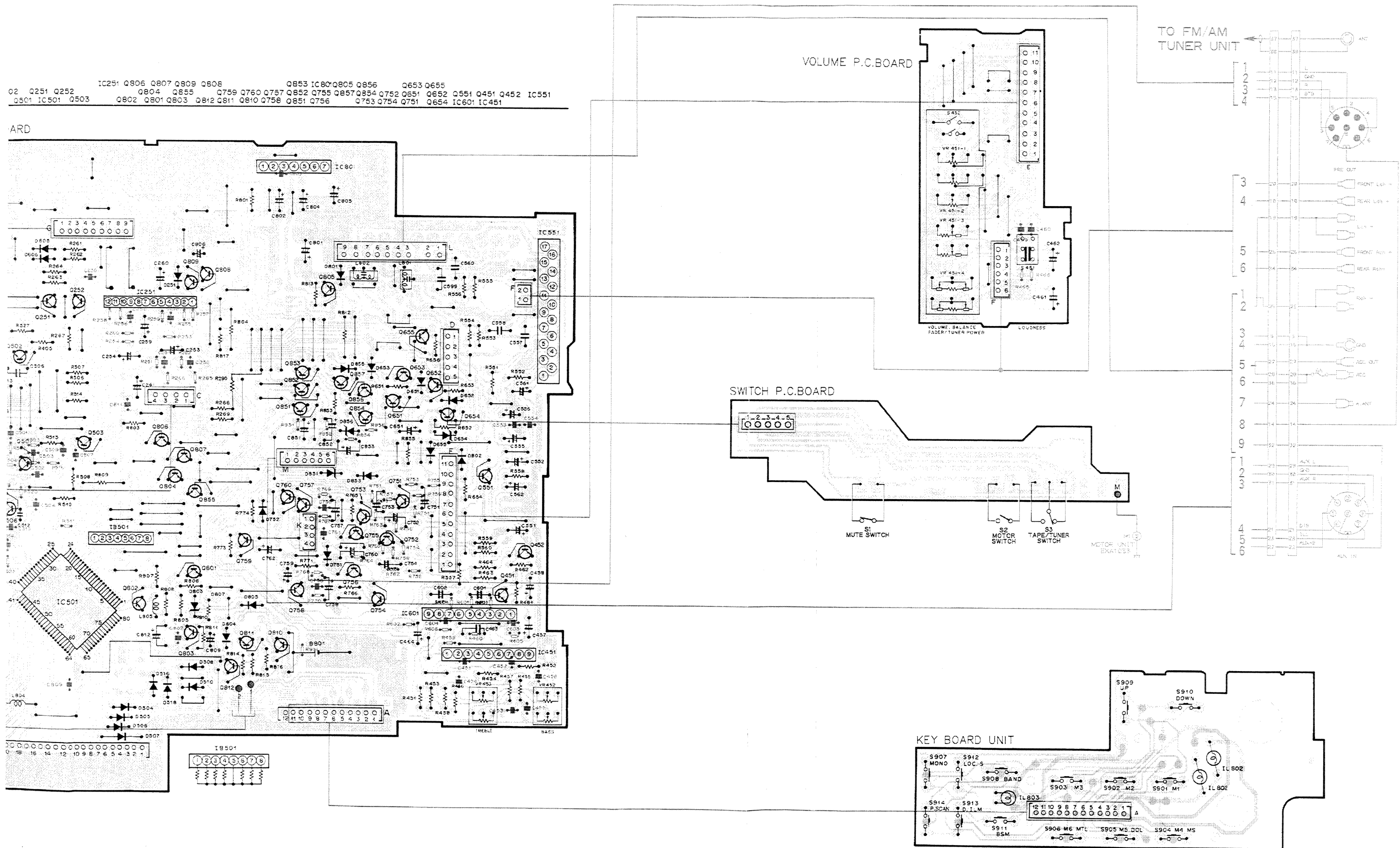
MOTHER P.C.BOARD



SWITCH P.C.BOARD



MUTE



A

B

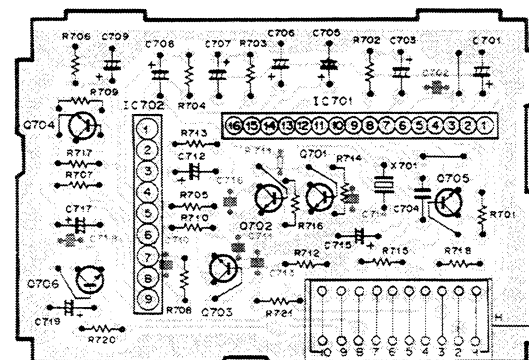
C

D

12. CONNECTION DIAGRAM (KEH-5100SDK/WG)

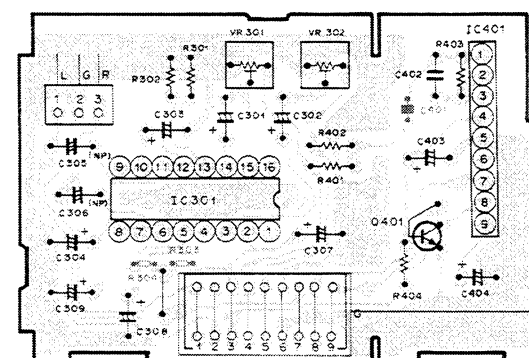
IC: Q 704 Q706 IC702 Q703 Q702 Q701 IC701 Q705

SDK P.C. BOARD

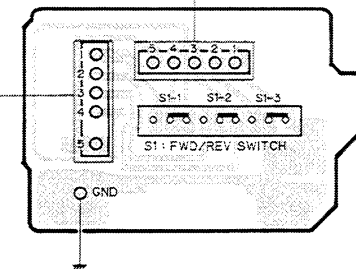


IC: Q ADJ IC301 VR301 VR302 Q401 IC401

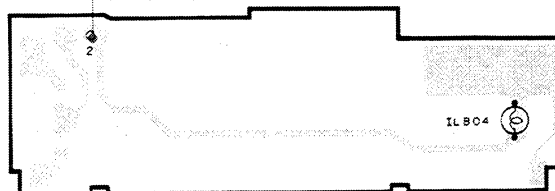
MS DOLBY NR P.C. BOARD



PC BOARD UNIT

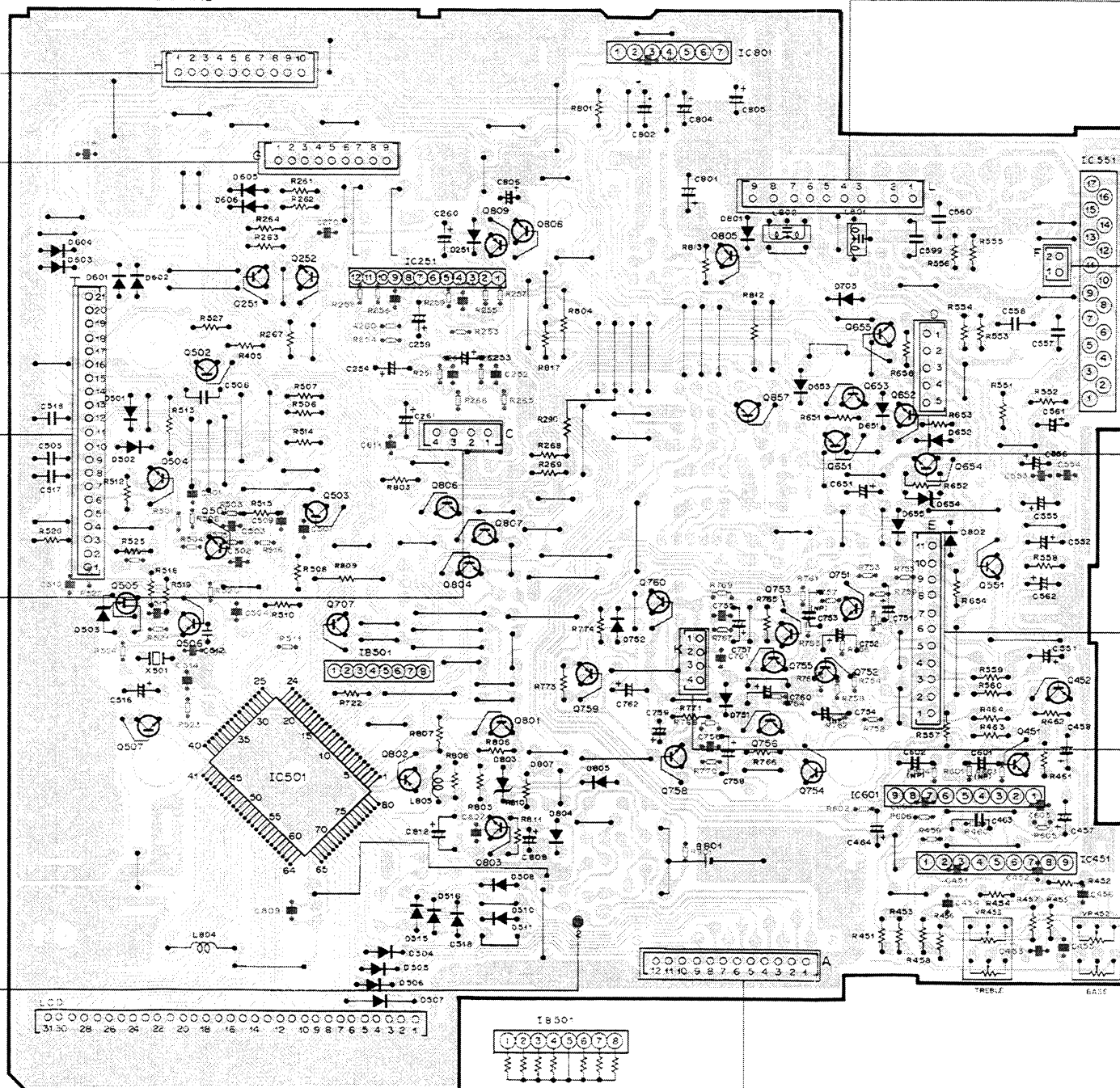


LCD P.C. BOARD



IC: Q Q505 Q504 Q502 Q251 Q252 Q656 IC251 Q806 Q807 Q809 Q808 Q710 IC801/Q805 Q653 Q655 Q755 Q857 Q752 Q651 Q652 Q551 Q451 Q452 IC551 Q756 Q753 Q754 Q751 Q654 IC601 IC451

MOTHER P.C. BOARD



13. SCHEMATIC CIRCUIT DIAGRAM (KEH-5100SDK/WG)

NOTE:
 Chip Resistor
 Chip Capacitor
 Chip Diode
 Chip Transistor
 Decimal points for resistor and capacitor fixed values are expressed as:
 2.2 → 2R2
 0.022 → R022

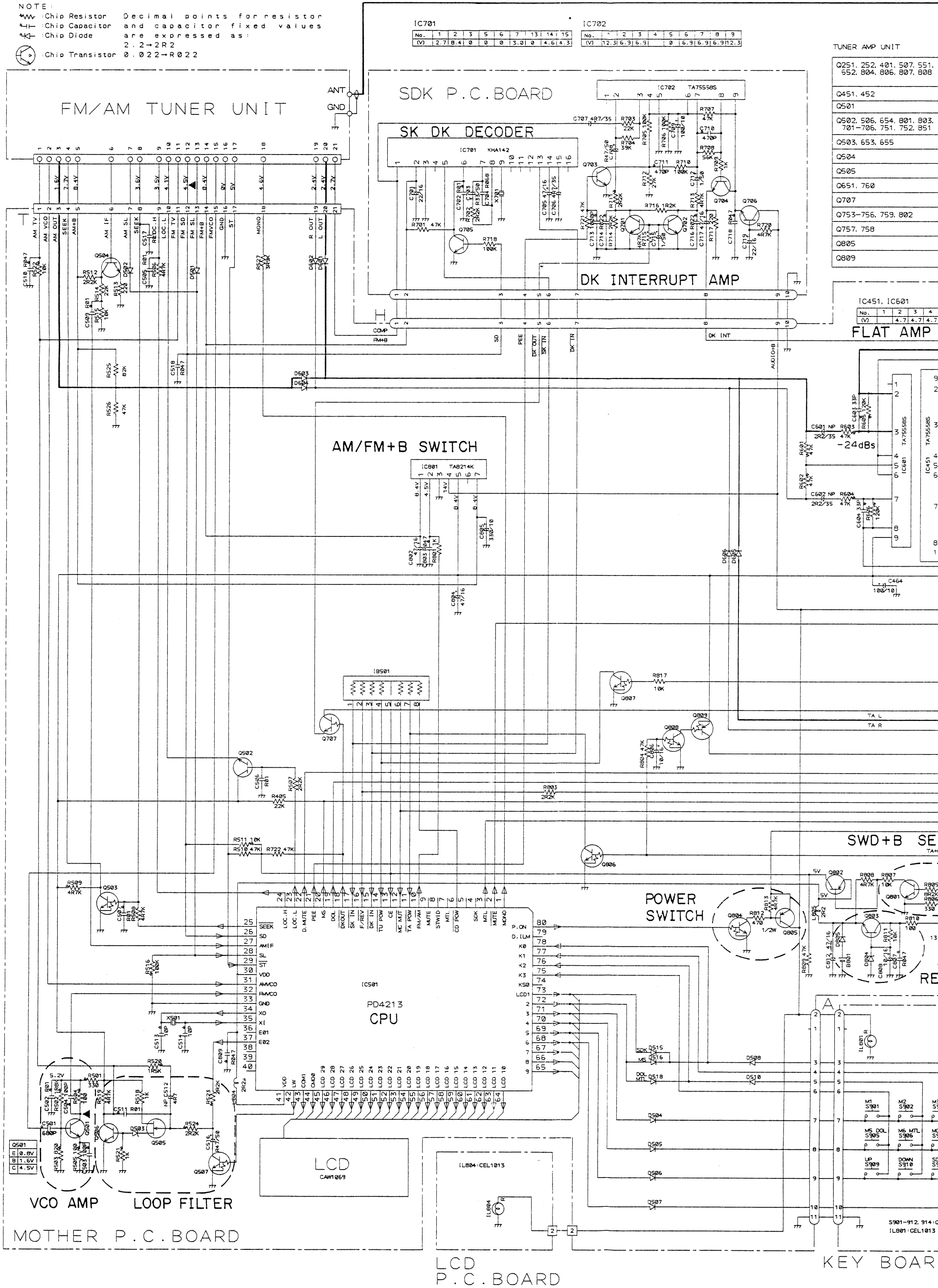




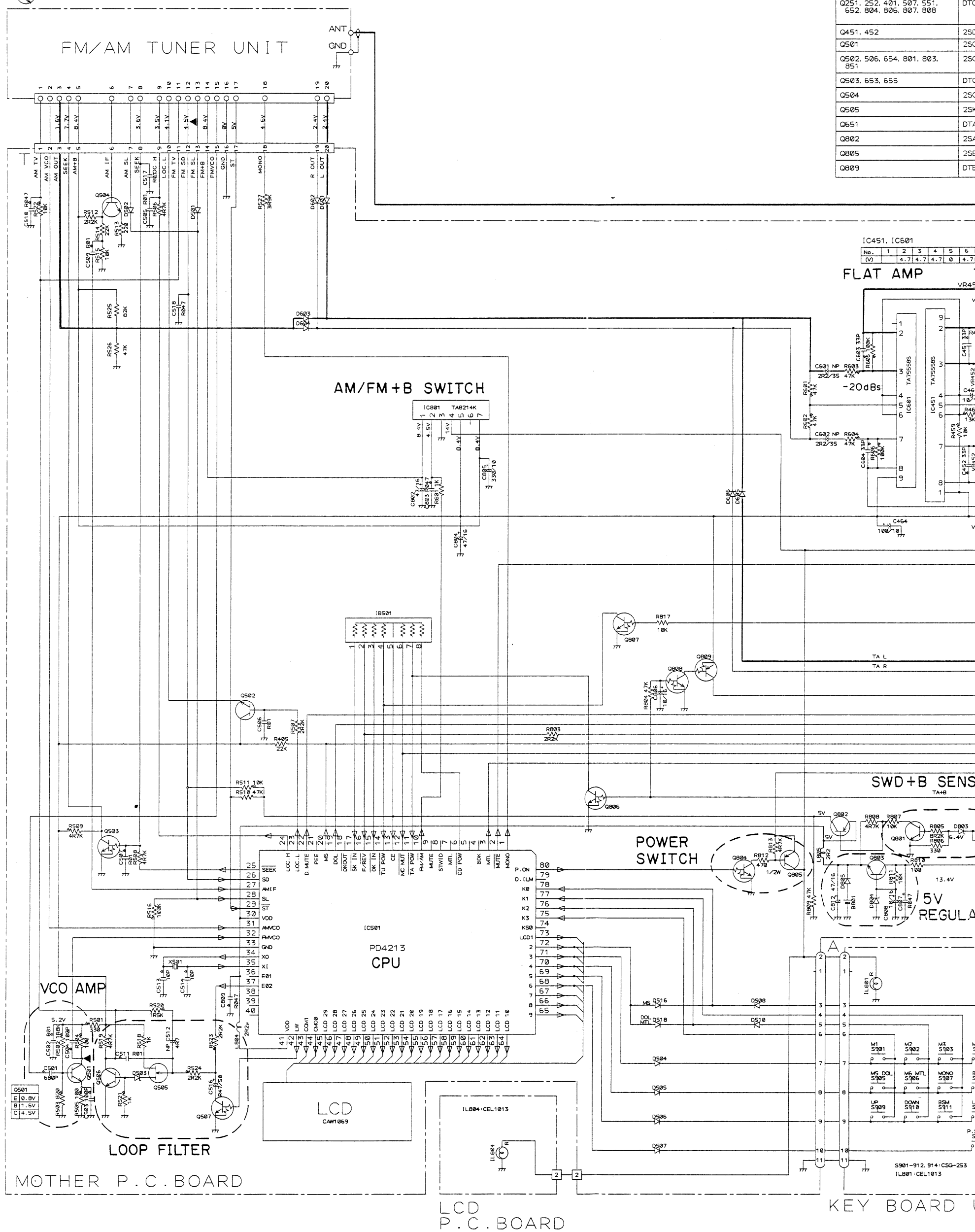




Fig. 19

14. SCHEMATIC CIRCUIT DIAGRAM (KEH-5100B/EW)

NOTE:
 Chip Resistor
 Chip Capacitor
 Chip Diode
 Chip Transistor
 Decimal points for resistor and capacitor fixed values are expressed as:
 2.2-2R2
 0.022-R022



TUNER AMP UNIT

Q251, 252, 401, 507, 551, 652, 804, 806, 807, 808	DT
Q451, 452	250
Q501	250
Q502, 506, 654, 801, 803, 851	250
Q503, 653, 655	DT
Q504	250
Q505	250
Q651	DT
Q802	250
Q805	250
Q809	DT

IC451, IC601

No.	1	2	3	4	5	6
(V)	4.7	4.7	4.7	0	4.7	4.7

FLAT AMP

VR451

TA7556S

TA7556S

TA7556S

TA7556S

TA7556S

TA7556S

TA7556S

TA7556S

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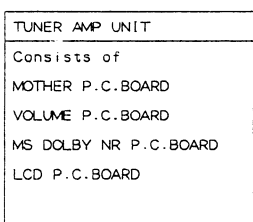
TA7556S

TA7556S

TA7556S

TA7556S

No.	1	2	3	4	5	9	11	12	13
(V)	4.8	4.8	4.8	4.8	0	14.3	5.8	5.8	0



SWITCHES:

- VOLUME P.C. BOARD
S451: LOUDNESS SWITCH ON — OFF
S452: TUNER SWITCH ON — OFF
- SWITCH P.C. BOARD
S1: MUTE SWITCH ON (EJECT) — OFF (PLAY)
S2: MOTOR SWITCH ON — OFF
S3: TAPE/TUNER SWITCH TUNER — TAPE
- P.C. BOARD
S1: FWD/REV SWITCH FWD — REV

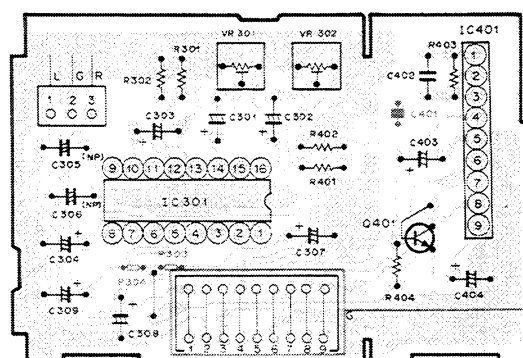
THE UNDERLINED INDICATES THE SWITCH POSITION.

Fig. 20

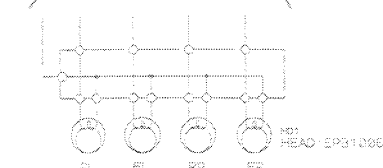
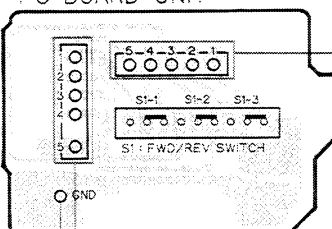
15. CONNECTION DIAGRAM (KEH-5100B/EW)

MS DOLBY NR P.C.BOARD

IC 301 VR301 VR302 Q401 IC401



PC BOARD UNIT

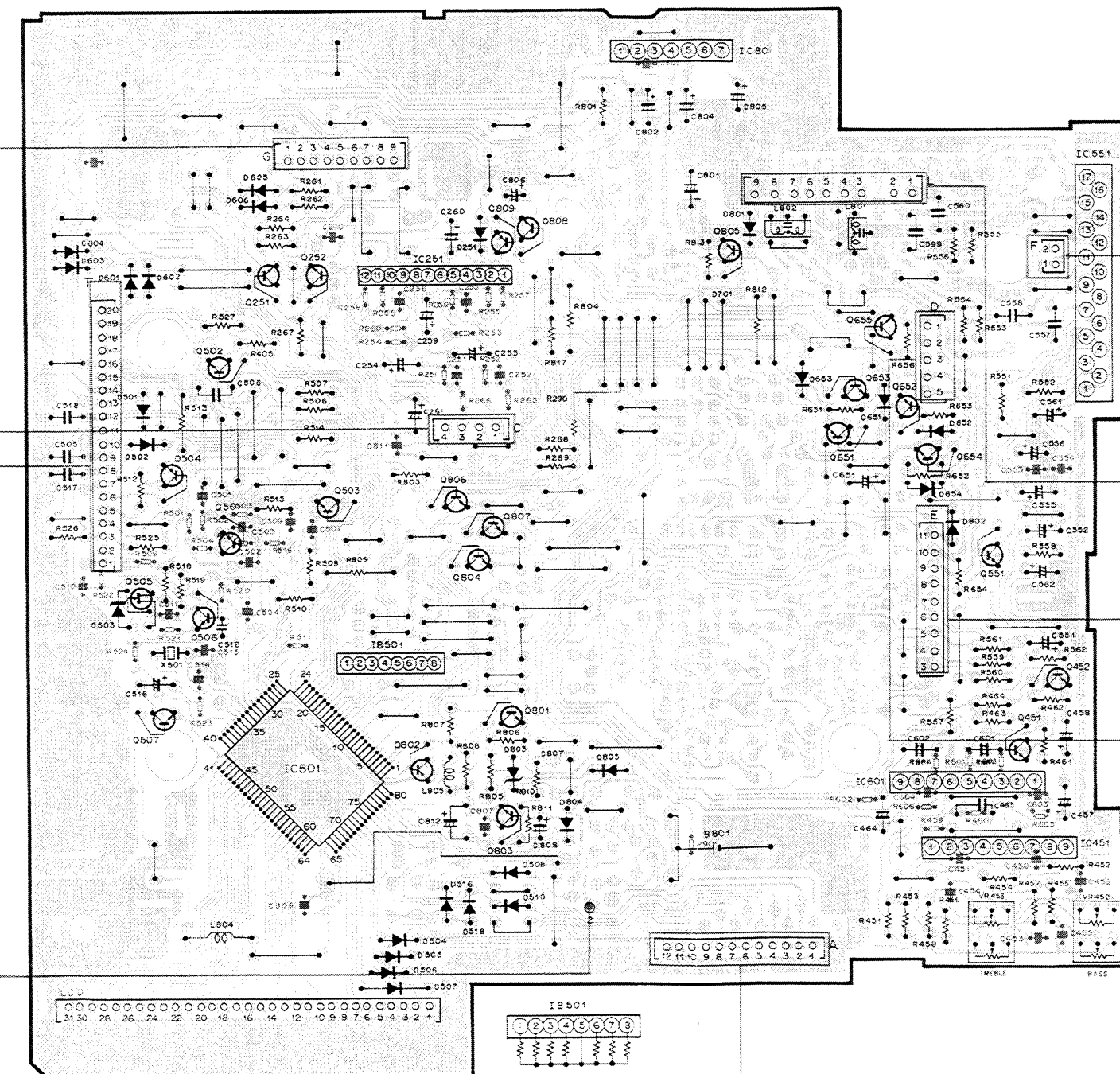


LCD P.C.BOARD



MOTHER P.C.BOARD

IC 251 Q806 Q807 Q809 Q808
Q505 Q504 Q502 Q251 Q252 Q804
IC 301 Q507 Q506 Q501 IC501 Q503 Q802 Q801 Q803
IC801 Q805 Q755 Q756
Q653 Q655 Q651 Q652 Q551 Q451 Q452 IC551
Q654 IC601 IC451

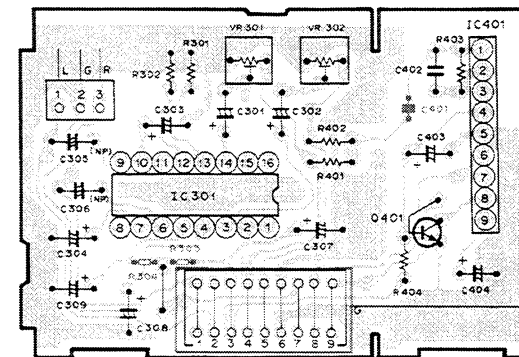


TO FM/AM
TUNER UNIT

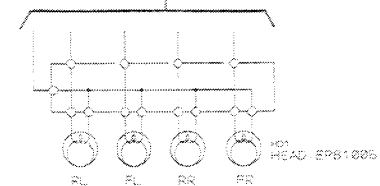
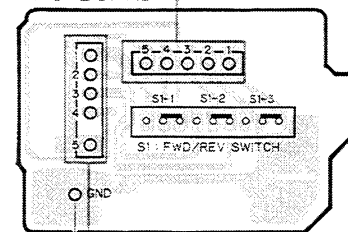


16. CONNECTION DIAGRAM (KEH-5101B/EW)

MS DOLBY NR P.C.BOARD

IC, Q IC301 VR301 VR302 Q401 IC401
ADJ

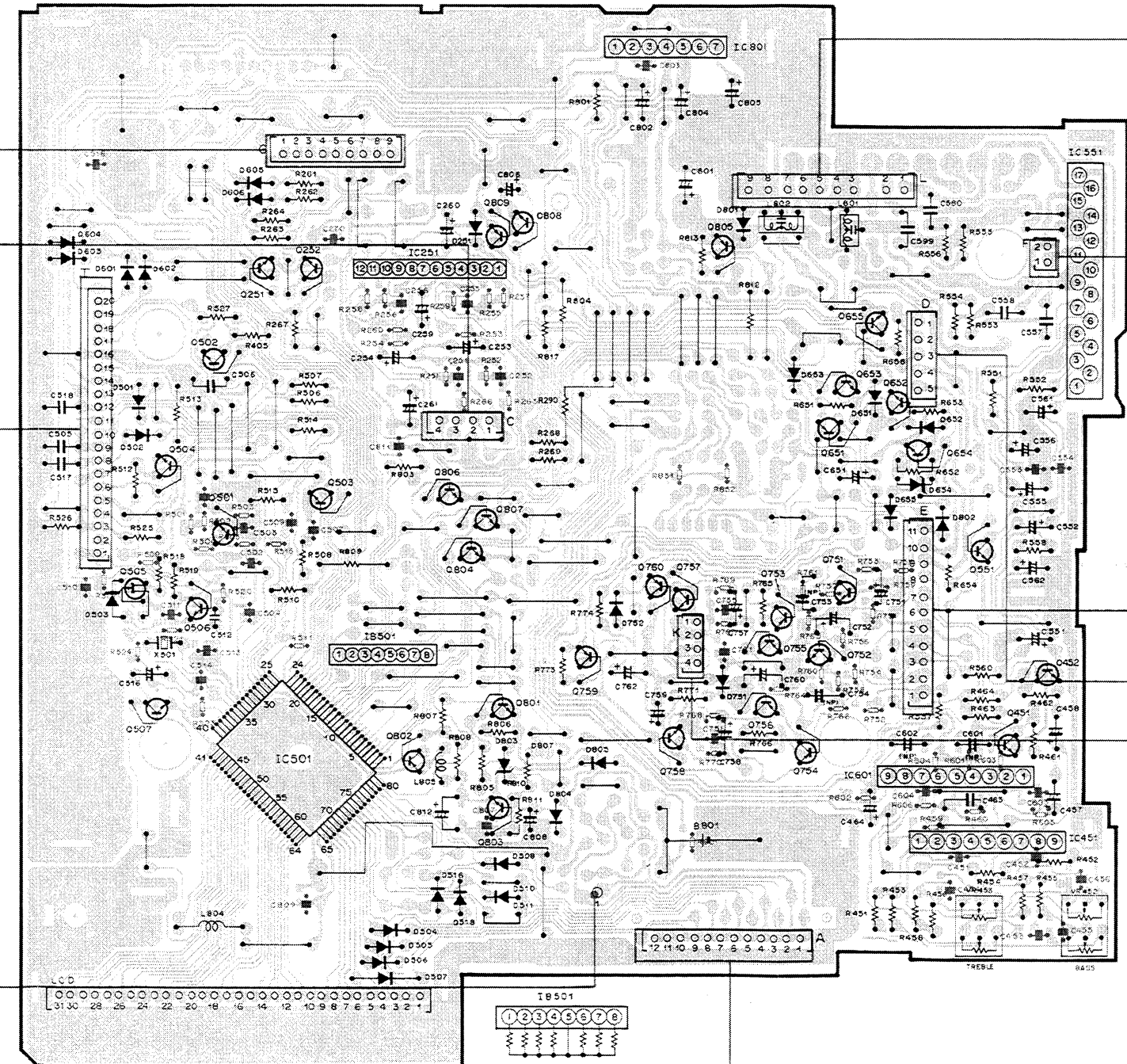
PC BOARD UNIT



LCD P.C.BOARD



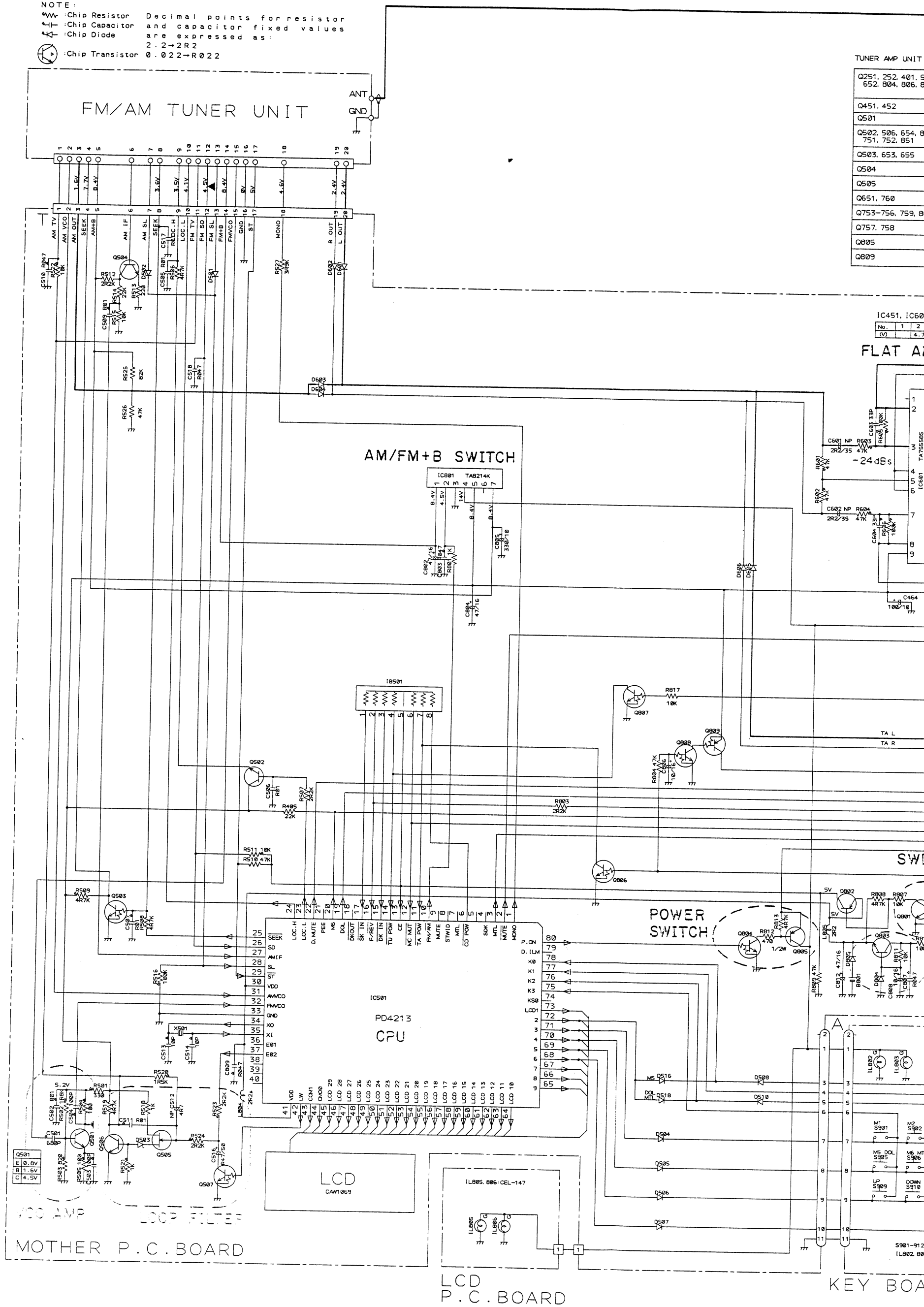
MOTHER P.C.BOARD

IC, Q Q505 Q504 Q502 Q251 Q252 IC251 Q806 Q807 Q809 Q808 Q804 Q759 Q760 Q757 Q758 IC801 Q805 Q752 Q651 Q652 Q551 Q451 Q452 IC551
ADJ Q507 Q506 Q501 IC501 Q503 Q802 Q801 Q803 Q756 Q753 Q754 Q751 Q654 IC601 IC451TO FM/AM
TUNER UNIT

SWI

17. SCHEMATIC CIRCUIT DIAGRAM (KEH-5101B/EW)

NOTE:
 : Chip Resistor
 : Chip Capacitor
 : Chip Diode
 : Chip Transistor
 Decimal points for resistor and capacitor fixed values are expressed as:
 2.2 → 2R2
 0.022 → R022



TUNER AMP UNIT	
Q251, 252, 401, 5	
652, 804, 806, 8	
Q451, 452	
Q501	
Q502, 506, 654, 8	
751, 752, 851	
Q503, 653, 655	
Q504	
Q505	
Q651, 760	
Q753-756, 759, 8	
Q757, 758	
Q805	
Q809	

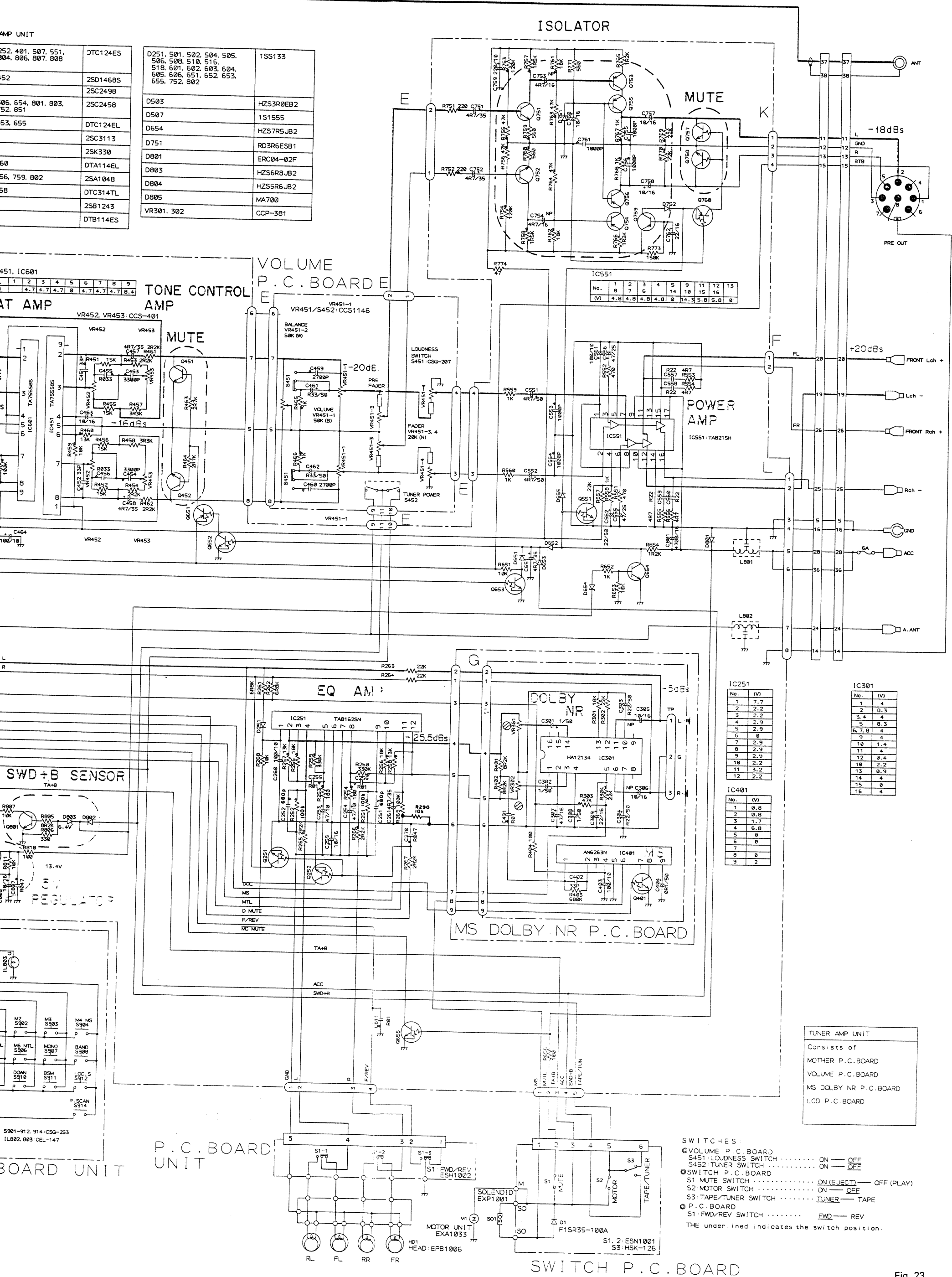
IC451, IC60	
No.	1 2
(V)	4.7

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87	88
89	90
91	92
93	94
95	96
97	98
99	100

SW

S901-912
IL802, 80

KEY BOA



A

B

C

D

E

F

18. CIRCUIT DIAGRAM AND P.C. BOARDS PATTERN

18.1 KEH-6100SDK/WG, KEH-5100SDK/WG

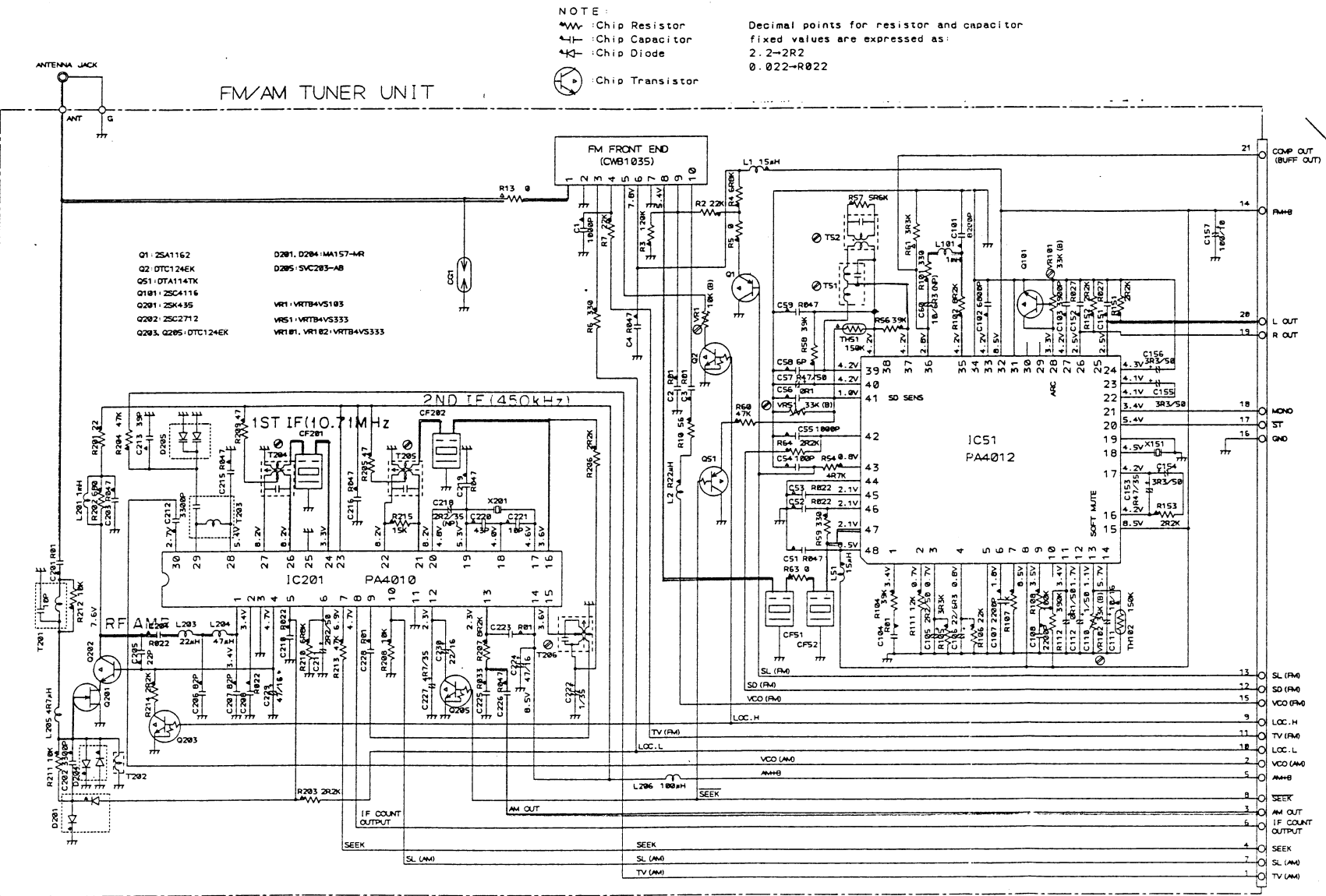


Fig. 24

18.2 KEH-6100B/EW, KEH-5100B/EW, KEH-51013/EW

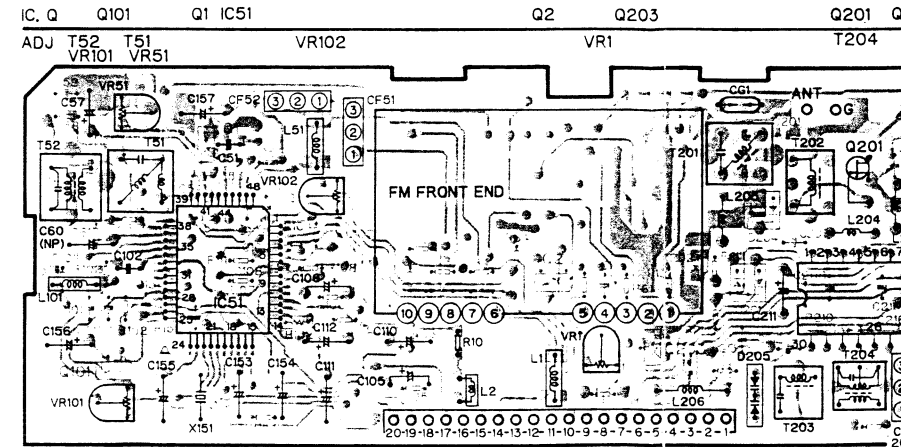
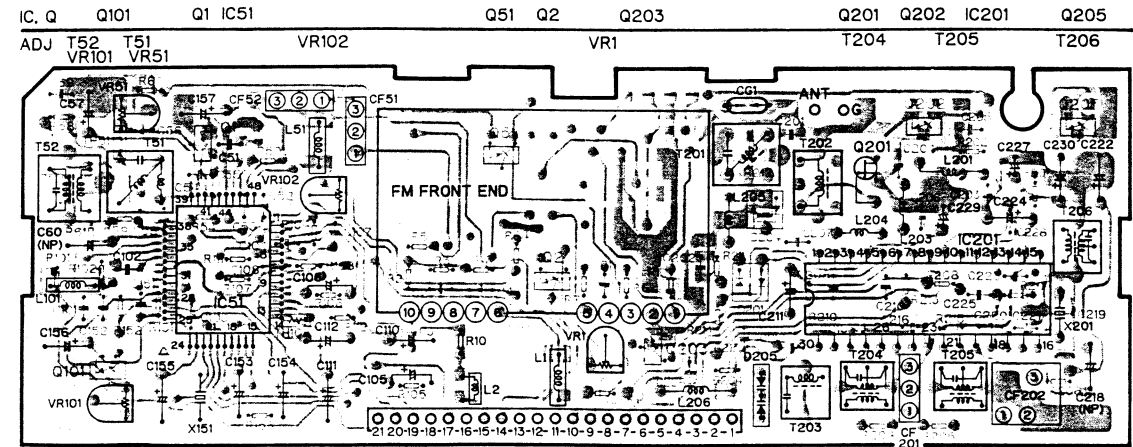
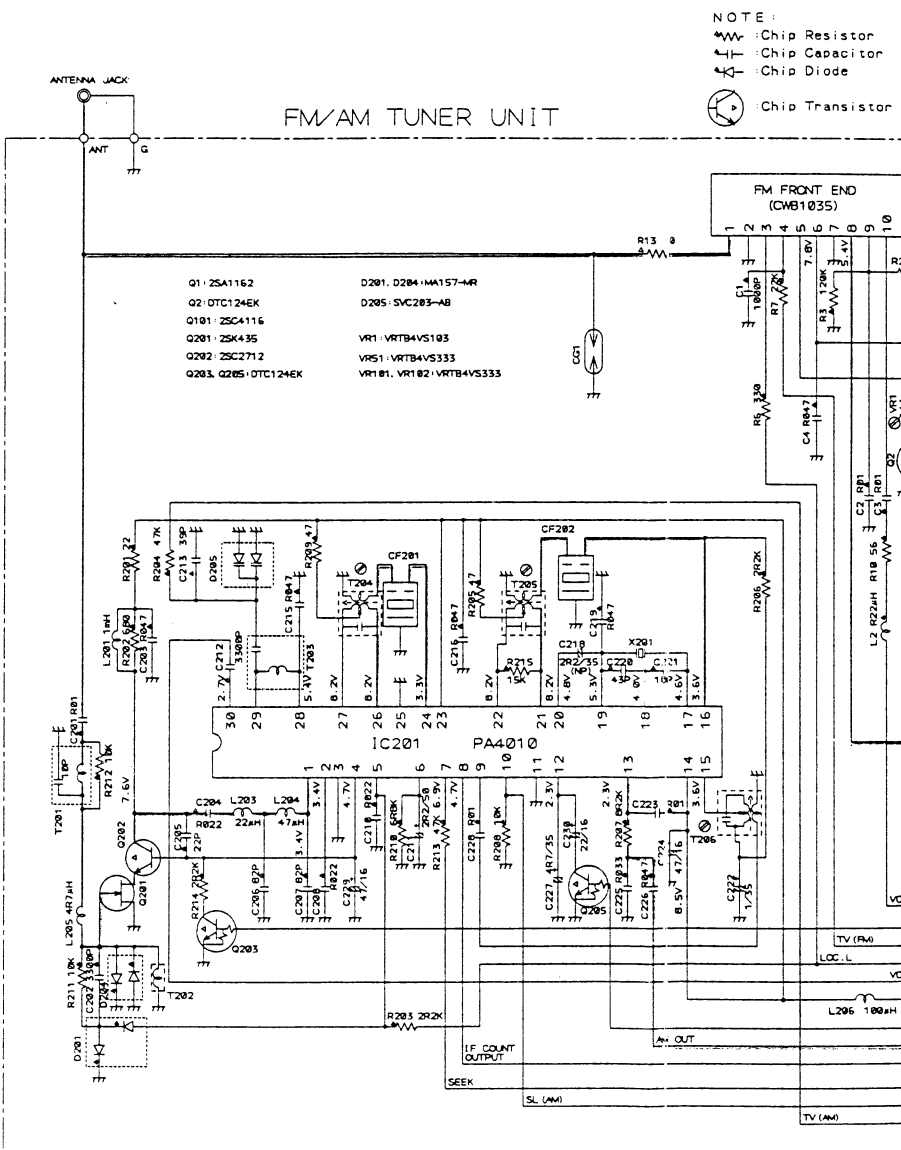


Fig. 25

19. CASSETTE MECHANISM ASSY EXPLODED VIEW

●Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Motor Unit	EXA1033	46	Arm	
2	Screw	EBA1008	47	Spring	EBH1040
3	Solenoid	EXP1001	48	Spring	EBH1041
4	.....		49	Spring	EBH1021
5	.....		50	Lever	
6	Spring	EBH1056	51	Washer	EBE1001
7	Washer	CBF-166	52	Spring	EBH1009
8	Reel Unit	EXA1032	53	Belt	ENT1009
9	Screw	BMZ23P030FMC	54	Gear	ENV1034
10	Screw	BSZ23P040FMC	55	Washer	CBF-135
11	Bracket		56	Gear	ENV1050
12	Screw	PMS26P025FUC	57	Cover	
13	Cassette Holder	ENC1013	58	Screw	EBA1013
14	Spring	EBH1019	59	Screw	BMZ20P050FMC
15	Screw	EBA1009	60	Head	EPB1006
16	Collar	ELA1042	61	Spring	EBH1065
17	Arm	ENV1032	62	P. C. Board	ENP1012
18	Arm	ENV1045	63	Arm	
19	Washer	YE12FUC	64	Head Base Unit	EXA1036
20	Spring	EBH1038	65	Spring	EBH1004
21	Spring	EBH1012	66	Spring	EBH1003
22	Lever Unit		67	Cushion	CNV1667
23	Washer	YE15FUC	68	Washer	YE20FUC
24	Washer	CBF-165	69	Pinch Roller Unit	EXA1034
25	Spring	EBH1049	70	Chassis Unit	
26	Arm		71	Washer	EBF1004
27	Spring	EBH1060	72	Pulley	ENV1009
28	Spring	EBH1066	73	Lever	
29	Arm	ENC1046	74	Spring	EBH1025
30	Arm		75	Spring	EBL1001
31	.....		76	Pulley	ENV1010
32	Arm	ENC1057	77	Arm	
33	Spring	EBH1008	78	Screw	HBA-147
34	Arm Unit		79	Gear	ENV1035
35	Washer	CBG1001	80	Collar	ELA1018
36	Washer	HBF-179	81	Arm	
37	Flywheel (N)	ENV1029	82	Plug (5P)	
38	Flywheel (R)	ENV1030	83	Gear	ENV1011
39	Belt	ENT1003	84	Arm	
40	Roller	ELA1051	85	Spring	EBH1024
41	Frame Unit	EXA1025	86	Ratchet	
42	Screw	PMS20P040FMC	87	Spring	EBH1018
43	Tape Guide	ENV1016	88	Pinch Roller Unit	EXA1035
44	Spring	EBH1020	89	Arm	
45	Lever		90	Lever	

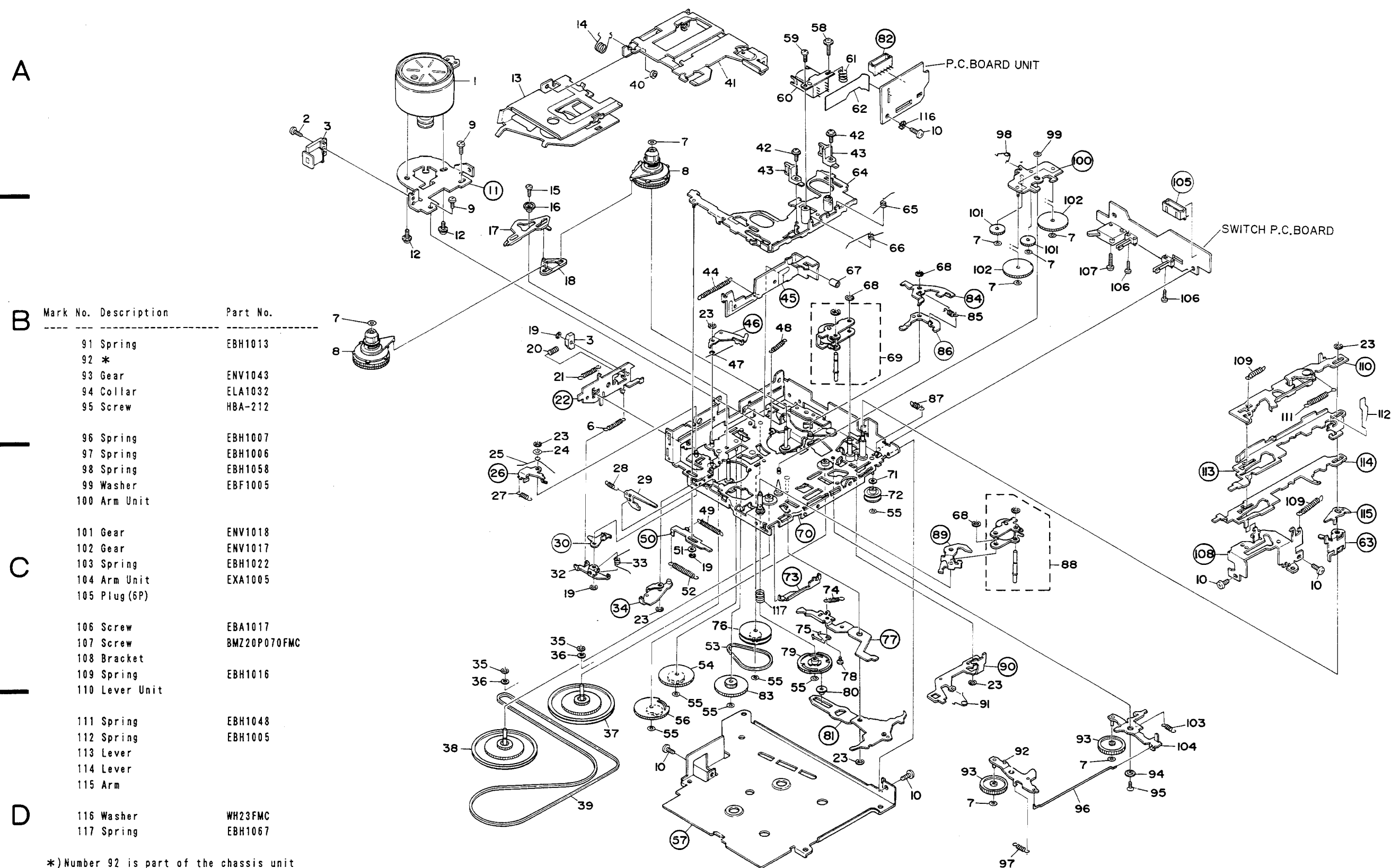


Fig. 28

20. EXPLODED VIEW

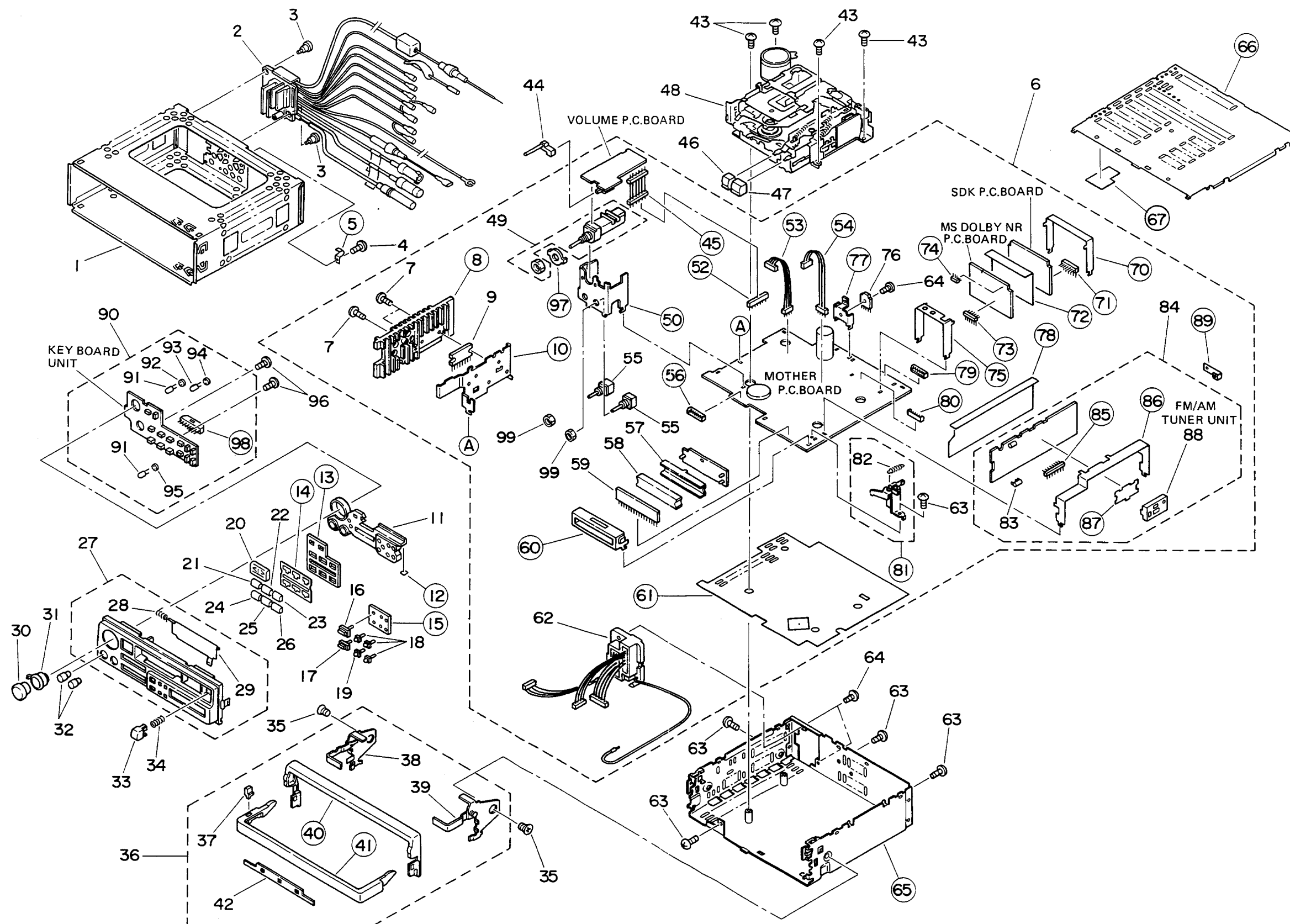


Fig. 29

• Parts List

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Box	CNB1289	* 46	Knob(<<)	CAC2159
2	Cord Assy	CDE2241	* 47	Knob(>>)	CAC2161
3	Screw	CBA1073	◎ 48	Cassette Mechanism Assy	EXK1071
4	Screw	BMZ30P040FMC	49	Volume	CCS1144
5	Clamper		50	Holder	
◎ 6	Tuner Amp Unit	CWM2087	51	.....
7	Screw	BMZ30P120FMC	52	Plug	
8	Heat Sink		53	Connector	
9	IC	TA8215H	54	Connector	
10	Holder		55	Volume	CCS-401
11	Lens	CNV2252	56	Connector	
12	Spacer		57	Housing	CNV2260
13	Cushion		58	Lens	CNV2254
14	Spacer		59	LCD	CAW1069
15	Cushion		60	Holder	
16	Button (BAND)	CAC2157	61	Insulator	
17	Button (SDK, BSM)	CAC2154	62	Cord Assy	CDE2508
18	Button	CAC2155	63	Screw	BMZ30P050FMC
19	Button	CAC2155	64	Screw	BMZ30P060FMC
20	Button	CAC2153	65	Chassis Unit	
21	Button (1)	CAC2147	66	Case	
22	Button (2)	CAC2148	67	Insulator	
23	Button (3)	CAC2149	68	.....
24	Button (4)	CAC2150	69	.....
25	Button (5)	CAC2151	70	Holder	
26	Button (6)	CAC2152	71	Connector	
27	Grille Unit	CXA3140	72	Insulator	
28	Spring	CBH1210	73	Connector	
29	Door	CAT1227	74	Plug	
30	Knob (VOLUME)	CAA1200	75	Holder	
31	Knob (FADER)	CAA1201	76	IC	TA8214K
32	Knob (BASS, TREBLE)	CAA1202	77	Holder	
33	Knob (<>)	CAC2163	78	Insulator	
34	Spring	CBH1187	79	Plug	
35	Screw	CMZ50P080FMC	80	Plug	
◎ 36	Quick Release Handle Assy	CXA3186	81	Lever Unit	
37	Button	CAC2165	82	Spring	CBH1191
38	Handle Unit	CXA3214	83	Antenna Jack	CKX1010
39	Handle Unit	CXA3215	◎ 84	FM/AM Tuner Unit	CWE1166
40	Panel		85	Plug	
41	Cover		86	Holder	
42	Handle	CNC3016	87	Insulator	
43	Screw	BMZ26P050FMC	88	FM Front End	CWB1035
44	Button	CAC2156	89	Holder	
45	Plug		◎ 90	Key Board Unit	CWM2190

Mark No.	Description	Part No.
91	Lamp	CEL-147
92	Bush	CNV-724
93	Lamp	CEL1013
94	Bush	CNV-724
95	Bush	CNW-855
96	Screw	BPZ20P060FMC
97	Spacer	
98	Connector	
99	Nut	CBA-066

● KEH-6100B/EW, KEH-5100SDK/WG, KEH-5100B/EW, KEH-5101B/EW

Mark	No.	Description	KEH-6100SDK/WG Part No.	KEH-6100B/EW Part No.	KEH-5100SDK/WG Part No.	KEH-5100B/EW Part No.	KEH-5101B/EW Part No.
●	2	Cord Assy	CDE2241	CDE2242	CDE2507	CDE2506	CDE2507
	6	Tuner Amp Unit	CWM2087	CWM2088	CWM2092	CWM2093	CWM2095
	19	Button	CAC2155	CAC2155	.....	.....	.....
	27	Grille Unit	CXA3140	CXA3139	CXA3146	CXA3144	CXA3145
	29	Door	CAT1227	CAT1227	CAT1227	CAT1227	CAT1228
	45	Plug	(11P)	(11P)	(11P)	(9P)	(11P)
	52	Plug	(11P)	(11P)	(11P)	(9P)	(11P)
	62	Cord Assy	CDE2508	CDE2508	CDE2511	CDE2510	CDE2511
	65	Chassis Unit					
	70	Holder		.....		.....	.....
	71	Connector		.....		.....	.....
	72	Insulator		.....		.....	.....
	79	Plug		.....		.....	.....
	84	FM/AM Tuner Unit	CWE1166	CWE1167	CWE1166	CWE1167	CWE1167
	85	Plug	(21P)	(20P)	(21P)	(20P)	(20P)
●	90	Key Board Unit	CWM2190	CWM2190	CWM2191	CWM2191	CWM2067
	91	Lamp	CEL-147	CEL-147	.....	.....	CEL-147
	92	Bush	CNV-724	CNV-724	.....	.....	CNV-724
	93	Lamp	CEL1013	CEL1013	CEL1013	CEL1013	.....
	94	Bush	CNV-724	CNV-724	CNV-724	CNV-724	.....
	95	Bush	CNW-855	CNW-855	.....	.....	CNW-855

21. PACKING METHOD

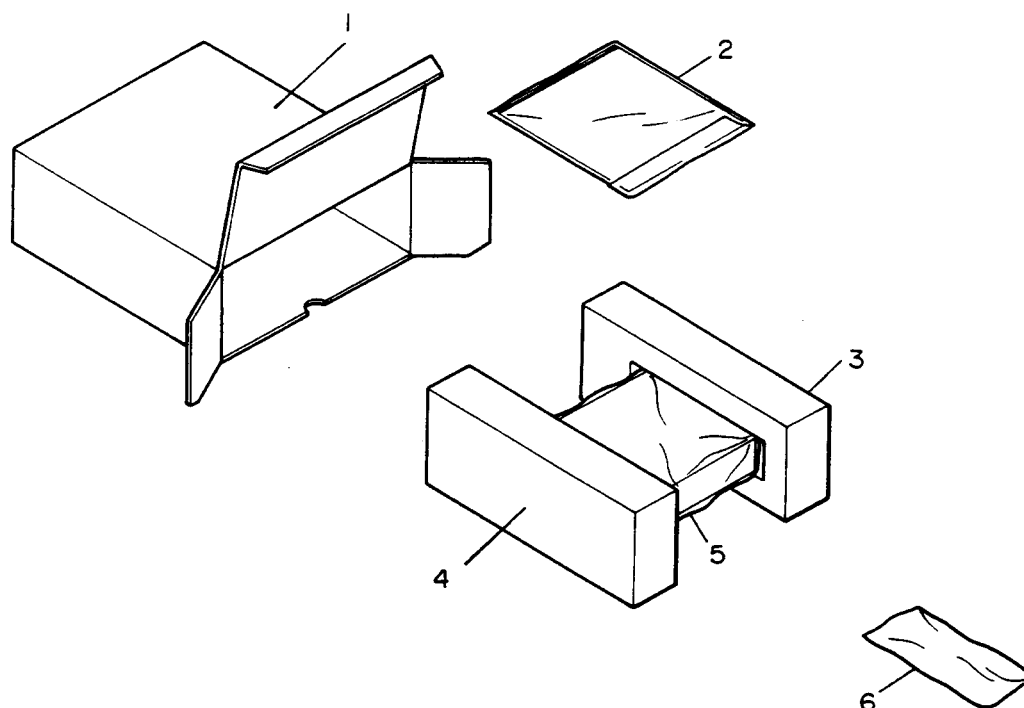


Fig. 30

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Carton (KEH-6100SDK/WG)	CHG1691	3	Styrofoam	CHP1258
	Carton (KEH-6100B/EW)	CHG1687	4	Styrofoam	CHP1257
	Carton (KEH-5100SDK/WG)	CHG1692	5	Cover	CEG-236
	Carton (KEH-5100B/EW)	CHG1688	6	Accessory Assy	CEA1471
	Carton (KEH-5101B/EW)	CHG1689	6-1	Screw (× 1)	CBA-102
2	Owner's Manual (WG)	CRD1322	6-2	Screw (× 1)	CBA1002
	(German, French)		6-3	Strap	CNF-111
	Owner's Manual (EW)	CRD1321	6-4	Bush	CNV1009
	(English, French, German, Spanish, Swedish, Norwegian, Dutch, Finnish)		6-5	Nut (× 2)	NF50FMC
	Installation Manual	CRD1323			
	(KEH-6100SDK/WG, KEH-6100B/EW)				
	Installation Manual	CRD1324			
	(KEH-5100SDK/WG, KEH-5100B/EW, KEH-5101B/EW)				

22. ELECTRICAL PARTS LIST

NOTE:

- For your parts Stock Control, the fast moving items are indicated with the marks ** and *.
- ** : GENERALLY MOVES FASTER THAN *.
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/8S □□□J, RS1/10S □□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

Unit Number :
Unit Name : FM/AM Tuner Unit (KEH-6100SDK/WG)

MISCELLANEOUS

RESISTORS

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
IC	51				PA4012	R	2	7 106			RS1/10S223J
IC	201				PA4010	R	3				RS1/10S124J
Q	1			Chip Transistor	2SA1162	R	4				RS1/10S682J
Q	2			Chip Transistor	DTC124EK	R	5	13 63			RS1/10S0R0J
Q	51			Chip Transistor	DTA114TK	R	6	59 101			RS1/10S331J
Q	101			Chip Transistor	2SC4116	R	10				RS1/10S560J
Q	201				2SK435	R	54				RS1/10S472J
Q	202			Chip Transistor	2SC2712	R	56	58 104			RS1/10S393J
Q	203 205			Chip Transistor	DTC124EK	R	57				RS1/10S562J
D	201 204			Chip Diode	MA157-MR	R	60				RS1/10S473J
D	205			Variable Capacitance Diode	SVC203-AB	R	61	105			RS1/10S332J
L	1 51			Inductor	CTF1104	R	64				RS1/10S222J
L	2			Inductor	CTF1086	R	102				RS1/10S822J
L	101			Inductor	CTF1126	R	107				RS1/10S102J
L	201			Inductor	CTF1084	R	108				RS1/10S104J
L	203			Ferri-Inductor	LAU220K	R	111				RS1/10S123J
L	204			Ferri-Inductor	LAU470K	R	112				RS1/10S394J
L	205			Ferri-Inductor	LAU4R7K	R	151	152 153			RS1/10S222J
L	206			Ferri-Inductor	CTF-157	R	201				RS1/10S220J
T	51			Coil	CTE1021	R	202				RS1/10S681J
T	52			Coil	CTE1022	R	203	206 214			RS1/10S222J
T	201			Coil	CTB1020	R	204	213			RS1/10S473J
T	202			Coil	CTB1004	R	205	209			RS1/10S470J
T	203			Coil	CTB1040	R	207				RS1/10S822J
T	204			Coil	CTE1037	R	208	211 212			RS1/10S103J
T	205			Coil	CTE1038	R	210				RS1/10S682J
T	206			Coil	CTE1039	R	215				RS1/10S153J
CG	1				DSP-201M						
TH	51 102			Thermister	DTN-T204D154K						
CF	51 52			Ceramic Filter	CTF-182						
CF	201			Ceramic Filter	CTF1041						
CF	202			Filter	(CTF1027)						
X	151			Ceramic Resonator	CTF1085						
					(CTF-100)						
X	201			Crystal Resonator	CSS1055						
					(CSS1053)						
VR	1			Semi-fixed 10kΩ (B)	CSS1014						
VR	51 101 102			Semi-fixed 33kΩ (B)	(CSS1057)						
				FM Front End	VRTB4VS103						
					VRTB4VS333						
					CWB1035						

CAPACITORS

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C	1				CKSQYB102K50
C	2	3 104			CKSQYB103K50
C	4	59			CKSQYF473225
C	51				CKSQYF473225
C	52	53			CKSQYB223K25
C	54				CCSQSL101J50
C	55				CKSQYB102K50
C	56				CKSQYF104Z25
C	57				CEAR47M50LS2
C	58				CCSQCH060D50

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.	Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
C	60		CEALNP100M6R3	Q	401		DTC124ES
C	101		CKSQYB822K50	Q	451 452		2SD1468S
C	102		CKSQYB682K50	Q	501		2SC2498
C	103		CKSQYB392K50	Q	502 506 801 803		2SC2458
C	105		CEA2R2M50LL	Q	503 653 655 709		DTC124EL
C	106		CEA220M6R3LL	Q	504		2SC3113
C	107 108		CKSQYB222K50	Q	505		2SK330
C	110		CEA010M50LL	Q	507		DTC124ES
C	111		CEA100M16LL	Q	551		DTC124ES
C	112		CEA0R1M50LL	Q	651		DTA114EL
C	151 152		CKSQYB273K25	Q	652		DTC124ES
C	153		CSZAR47M35L	Q	654		2SC2458
C	154 155 156		CEA3R3M50LL	Q	701 702 703 704 705 706		2SC2458
C	157		CEA101M10LS	Q	707		DTC124TS
C	201 223 228		CKSQYB103K25	Q	708		DTC124ES
C	202 212		CKSQYB332K50	Q	710		2SB1243
C	203 215 216 219 226		CKSQYF473Z25	Q	751 752		2SC2458
C	204 208 210		CKSQYB223K25	Q	753 754 755 756 759		2SA1048
C	205		CCSQCH220J50	Q	757 758		DTC314TL
C	206 207		CCSQCH820J50	Q	760		DTA114EL
C	211		CEA2R2M50LL	Q	802		2SA1048
C	213		CCSQCH390J50	Q	804 806 807 808		DTC124ES
C	218		CEA2R2M35NPLL	Q	805		2SB1243
C	220		CCSQCH430J50	Q	809		DTB114ES
C	221		CCSQCH100D50	Q	810 811		2SB1243
C	222		CSZA010K35L	Q	812		DTC124ES
C	224		CEA470M16LL	Q	851 852		2SC3327
C	225		CKSQYB333K25	Q	853 857		DTA114EL
C	227		CEA4R7M35LS	Q	854 855 856		DTC124TS
C	229		CEA470M16LS	D	251		1SS133
C	230		CEA220M16LL				

Tuner Amp Unit(KEH-6100SDK/WG)

Consists of

- Mother P.C. Board
- Volume P.C. Board
- MS Dolby NR P.C. Board
- LCD P.C. Board
- SDK P.C. Board

Unit Number :

Unit Name : Tuner Amp Unit(KEH-6100SDK/WG)

MISCELLANEOUS

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.	Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
IC	251		TA8162SN	D	804		HZS5R6JB2
IC	301		HA12134	D	805		MA700
IC	401		AN6263N	D	851		HZS7R5JB2
IC	451 601		TA75558S	D	853		ERA15-02VH
IC	501		PD4213	D	855		1SS133
IC	551		TA8215H	D	856		HZS6R8JB2
IC	701		KHA142	L	801 802		CCG1003
IC	702		TA75558S	L	804	Ferri-Inductor	CTF1042
IC	801		TA8214K	L	805	Ferri-Inductor	LAU2R2M
Q	251 252		DTC124ES	IB	501		CWW1257

Mark	===== Circuit Symbol & No.	==== Part Name	Part No.	Mark	===== Circuit Symbol & No.	==== Part Name	Part No.
X	501	Crystal Resonator	CSS1011	R	526		RD1/4PS473JL
X	701	Ceramic Resonator	CSS1019	R	527		RD1/4PS392JL
IL	804	Lamp 14V 40mA	CEL1013	R	551 552		RD1/4PS331JL
IL	805 806	Lamp 14V 40mA	CEL-147	R	553 554 555 556		RD1/4PS4R7JL
VR	301 302	Semi-fixed 33kΩ (B)	CCP-381	R	557		RD1/4PS223JL
VR	451/S 452	Volume/Switch	CCS1144	R	558 559 560		RD1/4PS102JL
VR	452 453	Volume	CCS-401	R	601 602 603 604		RS1/10S473J
S	451	Switch	CSG-207	R	605 606		RS1/10S124J
		LCD	CAW1069	R	651 653		RD1/4PS103JL
				R	652		RD1/4PS102JL
RESISTORS				R	654		RD1/4PS122JL
Mark	===== Circuit Symbol & No.	==== Part Name	Part No.	R	656		RD1/4PS101JL
R	251 252		RS1/10S104J	R	701 707 721		RD1/4PS473JL
R	253 254		RS1/10S181J	R	702 714		RD1/4PS222JL
R	255 256		RS1/10S183J	R	703		RD1/4PS223JL
R	257 258		RS1/10S133J	R	704		RD1/4PS333JL
R	259 260		RS1/10S334J	R	705 706 710		RD1/4PS104JL
R	261 262		RD1/4PS682JL	R	708		RD1/4PS563JL
R	263 264		RD1/4PS223JL	R	709		RD1/4PS102JL
R	265 266		RS1/10S222J	R	711		RS1/10S222J
R	267		RD1/4PS222JL	R	712		RD1/4PS273JL
R	268		RD1/4PS103JL	R	713 715 720		RD1/4PS472JL
R	269		RD1/4PS104JL	R	716		RD1/4PS122JL
R	290		RD1/4PS103JL	R	717		RD1/4PS271JL
R	301		RD1/4PS183JL	R	718		RD1/4PS684JL
R	302 405		RD1/4PS223JL	R	722		RD1/4PS473JL
R	303		RS1/10S473J	R	723		RD1/4PS122JL
R	304		RS1/10S223J	R	724		RS1/8S473J
R	401 402		RD1/4PS822JL	R	725 726		RD1/4PS822JL
R	403		RD1/4PS684JL	R	727		RD1/4PS271JL
R	404		RD1/4PS101JL	R	728		RD1/4PS1R8JL
R	451 452 455 456		RD1/4PS153JL	R	729 730 802		RD1/4PS222JL
R	453 454		RD1/4PS332JL	R	751 752		RS1/10S221J
R	457 458		RD1/4PS332JL	R	753 754		RS1/10S124J
R	459		RS1/10S103J	R	755 756 763 764		RS1/10S473J
R	460		RS1/10S133J	R	757 758		RS1/10S152J
R	461 462		RD1/4PS182JL	R	759 760		RS1/10S561J
R	463 464		RD1/4PS222JL	R	761 762		RS1/10S183J
R	465 466		RS1/8S102J	R	765 766		RD1/4PS122JL
R	501		RS1/10S331J	R	767 768		RS1/10S102J
R	502		RS1/10S182J	R	769 770		RS1/10S223J
R	503		RS1/10S821J	R	771		RD1/4PS561JL
R	504 505		RS1/10S101J	R	773		RD1/4PS154JL
R	506 508 519 808 813		RD1/4PS472JL	R	774		RD1/4PS470JL
R	507 512 803		RD1/4PS222JL	R	804 809		RD1/4PM473J
R	509		RS1/10S472J	R	805		RD1/4PS822JL
R	510		RD1/4PS473JL	R	806		RD1/4PS331JL
R	511		RS1/10S563J	R	810		RD1/4PS101JL
R	513		RD1/4PM221J	R	812		RD1/2PS471JL
R	514		RD1/4PS223JL	R	814 816		RD1/4PS122JL
R	515 807 811 817		RD1/4PS103JL	R	815		RD1/4PS472JL
R	516		RS1/10S104J	R	851 852		RS1/10S223J
R	518 801		RD1/4PS102JL	R	853		RD1/4PS102JL
R	520		RS1/8S152J	R	854		RS1/10S333J
R	521		RS1/10S102J	R	855		RD1/4PS222JL
R	522		RS1/10S103J	R	856		RS1/10S331J
R	523 524		RS1/10S222J	R	901		RS1/10S0R0J
R	525		RD1/4PS823JL				

CAPACITORS

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C	251	252		CKSQYB681K50	
C	253	254		CEA470M10LS	
C	255	256		CKSQYB103K50	
C	259			CEA100M16LS2	
C	260			CEA101M10LS	
C	261			CEA4R7M35LS	
C	270			CKSQYF473Z50	
C	301	302 308		CEA010M50LL	
C	303	304		CEAR22M50LL	
C	305	306		CEA100M16NPLL	
C	307			CEA470M16LS	
C	309			CEA220M16LS	
C	401			CKSQYB103K50	
C	402			CCPSL330J50L	
C	403			CEA101M10LS	
C	404			CEA0R1M50LL	
C	451	452 603 604		CCSQCH330J50	
C	453	454		CKSQYB332K50	
C	455	456		CKSQYF333Z50	
C	457	458		CEA4R7M35L2	
C	459	460		CKSQYB272K50	
C	461	462		CEAR33M50LS2	
C	463			CEA100M16L2	
C	464			CEA101M10L2	
C	501			CKSQYB681K50	
C	502	507 509 511 811		CKSQYB103K50	
C	503			CCSQCH101K50	
C	504			CCSCH101J50	
C	505	506 517		CKPYY103M16L	
C	510			CKSQYB473K25	
C	803	807		CKSQYF473Z50	
C	512		4.7 μ F/16V	GCH1005	
C	513	514		CCSQCH100D50	
C	516			CEA47M50LS2	
C	518			CKSYF473Z50	
C	551	552		CEHAQ4R7M50	
C	553	554		CKSQYB102K50	
C	555	556		CEHAQ470M25	
C	557	559 560		CQEA224J63	
C	558			CQEA224J63	
C	561			CEHAQ101M10	
C	562			CEHAQ220M50	
C	601	602		CEA2R2M35NPLL	
C	651			CEA4R7M35LS	
C	701	719		CEA220M16LS	
C	702			CKSQYB103K50	
C	703			CEAR33M50LS2	
C	704			CQMA683J50LL	
C	705	717		CEA470M16LS	
C	706	707		CEA4R7M35LS	
C	708			CEAR47M50LS2	
C	709			CEA101M10LS	
C	710	711		CKSQYB471K50	
C	712	715		CEA010M50LS2	
C	713			CKSQYB102K50	

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
C	714	716		CKSQYB223K25	
C	718			CKSQYF473Z50	
C	751	752		CEA4R7M35LS	
C	753	754		CEALNP4R7M16	
C	755	756 761		CKSQYB102K50	
C	757	758 760		CEA100M16LS2	
C	759			CEA221M10L2	
C	762			CEA220M16LS	
C	801			CEA472M16L2	
C	802	804		CEA470M16L2	
C	805			CEA331M10L2	
C	806			CEA100M16LS	
C	808			CEA100M16LS2	
C	809			CKSQYF104Z25	
C	812			CEA470M16LS	
C	851	852		CEA4R7M35LS	
C	853			CEA220M16LS	

Tuner Amp Unit (KEH-6100B/EW)

Consists of

- Mother P.C. Board
- Volume P.C. Board
- MS Dolby NR P.C. Board
- LCD P.C. Board

Unit Number :

Unit Name : Tuner Amp Unit (KEH-6100B/EW)

MISCELLANEOUS

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
IC	251			TA8162SN	
IC	301			HA12134	
IC	401			AN6263N	
IC	451	601		TA75558S	
IC	501			PD4213	
IC	551			TA8215H	
IC	801			TA8214K	
Q	251	252		DTC124ES	
Q	401			DTC124ES	
Q	451	452		2SD1468S	
Q	501			2SC2498	
Q	502	506 801 803		2SC2458	
Q	503	653 655		DTC124EL	
Q	504			2SC3113	
Q	505			2SK330	
Q	507			DTC124ES	
Q	551			DTC124ES	
Q	651			DTA114EL	
Q	652			DTC124ES	
Q	654			2SC2458	
Q	751	752		2SC2458	
Q	753	754 755 756 759		2SA1048	
Q	757	758		DTC314TL	
Q	760			DTA114EL	
Q	802			2SA1048	

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
Q	804 806 807 808				DTC124ES	R	401 402				RD1/4PS822JL
Q	805				2SB1243	R	403				RD1/4PS684JL
Q	809				DTB114ES	R	404				RD1/4PS101JL
Q	810 811				2SB1243	R	451 452 455 456				RD1/4PS153JL
Q	812				DTC124ES	R	453 454				RD1/4PS332JL
Q	851 852				2SC3327	R	457 458				RD1/4PS332JL
Q	853 857				DTA114EL	R	459				RS1/10S103J
Q	854 855 856				DTC124TS	R	460				RS1/10S133J
D	251				1SS133	R	461 462				RD1/4PS222JL
D	501 504 505 506 601 602 603 604 605 606				1SS133	R	463 464				RD1/4PS272JL
D	502 802				1SS133	R	465 466				RS1/8S102J
D	503				HZS3R0EB2	R	501				RS1/10S331J
D	507				1S1555	R	502				RS1/10S182J
D	508 510 516 518				1SS133	R	503				RS1/10S821J
D	651 652 653				1SS133	R	504 505				RS1/10S101J
D	654				HZS7R5JB2	R	506 508 519 808 813				RD1/4PS472JL
D	655 752				1SS133	R	507 512 803				RD1/4PS222JL
D	751				RD3R6ESB1	R	509				RS1/10S472J
D	801				ERC04-02F	R	510				RD1/4PS473JL
D	803				HZS6R8JB2	R	511				RS1/10S563J
D	804				HZS5R6JB2	R	513				RD1/4PM221J
D	805				MA700	R	514				RD1/4PS223JL
D	851				HZS7R5JB2	R	515 807 811 817				RD1/4PS103JL
D	853				ERA15-02VH	R	516				RS1/10S104J
D	855				1SS133	R	518 801				RD1/4PS102JL
D	856				HZS6R8JB2	R	520				RS1/8S152J
L	801 802				CCG1003	R	521				RS1/10S102J
L	804	Ferri-Inductor			CTF1042	R	522				RS1/10S103J
L	805	Ferri-Inductor			LAU2R2M	R	523 524				RS1/10S222J
LB	501				CWW1257	R	525				RD1/4PS823JL
X	501	Crystal Resonator			CSS1011	R	526				RD1/4PS473JL
IL	804	Lamp			CEL1013	R	527				RD1/4PS392JL
IL	805 806	Lamp 14V 40mA			CEL-147	R	551 552				RD1/4PS471JL
VR	301 302	Semi-fixed 33k Ω (B)			CCP-381	R	553 554 555 556				RD1/4PS4R7JL
VR	452 453	Volume			CCS-401	R	557				RD1/4PS223JL
VR	451/S 452	Volume/Switch			CCS1144	R	558 559 560				RD1/4PS102JL
S	451	Switch			CSG-207	R	601 602 603 604				RS1/10S473J
		LCD			CAN1069	R	605 606				RS1/10S104J
						R	651 653				RD1/4PS103JL
						R	652				RD1/4PS102JL

RESISTORS

Mark	====	Circuit Symbol & No.	====	Part Name	Part No.	Mark	====	Circuit Symbol & No.	====	Part Name	Part No.
R	251 252				RS1/10S104J	R	654				RD1/4PS122JL
R	253 254				RS1/10S181J	R	656				RD1/4PS101JL
R	255 256				RS1/10S183J	R	751 752				RS1/10S221J
R	257 258				RS1/10S133J	R	753 754				RS1/10S124J
R	259 260				RS1/10S334J	R	755 756 763 764				RS1/10S473J
R	261 262				RD1/4PS682JL	R	757 758				RS1/10S152J
R	263 264				RD1/4PS223JL	R	759 760				RS1/10S561J
R	265 266				RS1/10S222J	R	761 762				RS1/10S183J
R	267				RD1/4PS222JL	R	765 766				RD1/4PS152JL
R	268				RD1/4PS103JL	R	767 768				RS1/10S102J
R	269				RD1/4PS104JL	R	769 770				RS1/10S223J
R	290				RD1/4PS103JL	R	771				RD1/4PS561JL
R	301				RD1/4PS183JL	R	773				RD1/4PS154JL
R	302 405				RD1/4PS223JL	R	774				RD1/4PS470JL
R	303				RS1/10S473J	R	804 809				RD1/4PM473J
R	304				RS1/10S223J						

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• FM/AM Tuner Unit

	KEH-6100SDK/WG KEH-5100SDK/WG	KEH-6100B/EW KEH-5100B/EW KEH-5101B/EW
Q 51 R 60	DTA114TK RS1/10S473J	----- -----

• Tuner Amp Unit

	KEH-6100SDK/WG	KEH-5100SDK/WG
Q 708 Q 810 811 Q 812 Q 851 852 Q 853 857 Q 854-856	DTC124ES 2SB1243 DTC124ES 2SC3327 DTA114EL DTC124TS	----- ----- ----- ----- ----- -----
D 701 D 702 D 703 D 852 854 D 855 D 856	1S1555 ERA15-02 ERA15-02VH 1SS133 1SS133 HZS6R8JB2	----- ----- ----- ----- ----- -----
VR451/S452 IL 805 806 B 801	CCS1144 CEL-147 CEX1008	CCS1146 ----- CEX1009
R 463 R 723 R 724 R 802 R 814 816 R 815	RD1/4PS222JL RD1/4PS122JL RS1/8S473J RD1/4PS222JL RD1/4PS122JL RD1/4PS472JL	RD1/4PS272JL ----- ----- ----- ----- -----
R 851 852 R 853 R 854 R 855 R 856	RS1/10S223J RD1/4PS102JL RS1/10S333J RD1/4PS222JL RS1/10S331J	----- ----- ----- ----- -----
C 307 C 309 C 403 C 851 852 C 853	CEA470M16LS CEA220M16LS CEA100M10LS CEA4R7M35LS CEA220M16LS	CEA470M16LL CEA220M16LL CEA100M10LL ----- -----

• Key Board Unit

	KEH-6100B/EW KEH-6100SDK/WG	KEH-5100B/EW KEH-5100SDK/WG	KEH-5101B/EW
IL 801 IL 802 803 S 913	CEL1013 CEL-147 CSG-253	CEL1013 ----- -----	----- CEL-147 -----

• Tuner Amp Unit

	KEH-6100B/EW	KEH-5100B/EW	KEH-5101B/EW
Q 751 752 Q 753 754 Q 755 756 Q 757 758 Q 759	2SC2458 2SA1048 2SA1048 DTC314TS 2SA1048	----- ----- ----- ----- -----	2SC2458 2SA1048 2SA1048 DTC314TS 2SA1048
Q 760 Q 810 811 Q 812 Q 851 852 Q 853 857	DTA114ES 2SB1243 DTC124ES 2SC3327 DTA114ES	----- ----- ----- ----- -----	DTA114ES ----- ----- ----- -----
Q 854-856 D 655 D 751 D 752 D 851	DTC124TS 1SS133 RD3R6ESB1 1SS133 HZS7R5JB2	----- ----- ----- ----- -----	----- 1SS133 RD3R6ESB1 1SS133 -----
D 853 D 855 D 856 VR451/S452 IL 804	ERA15-02VH 1SS133 HZS6R8JB2 CCS1144 CEL1013	----- ----- ----- CCS1145 CEL1013	----- ----- ----- CCS1146 -----
IL 805 806	CEL-147	-----	CEL-147
R 561 562 R 751 752 R 753 754 R 755 756 R 757 758	----- RS1/10S221J RS1/10S124J RS1/10S473J RS1/10S152J	RD1/4PS473JL ----- ----- ----- -----	----- RS1/10S221J RS1/10S124J RS1/10S473J RS1/10S152J
R 759 760 R 761 762 R 763 764 R 765 766 R 767 768	RS1/10S561J RS1/10S103J RS1/10S473J RD1/4PS152JL RS1/10S102J	----- ----- ----- ----- -----	RS1/10S561J RS1/10S103J RS1/10S473J RD1/4PS152JL RS1/10S102J
R 769 770 R 771 R 773 R 774 R 814 816	RS1/10S223J RD1/4PS561JL RD1/4PS154JL RD1/4PS470JL RD1/4PS122JL	----- ----- ----- ----- -----	RS1/10S223J RD1/4PS561JL RD1/4PS154JL RD1/4PS470JL -----
R 815 R 851 852 R 853 R 854 R 855 R 856	RD1/4PS472JL RS1/10S223J RD1/4PS102JL RS1/10S473J RD1/4PS222JL RS1/10S331J	----- ----- ----- ----- ----- -----	----- ----- ----- ----- ----- -----
C 751 752 C 753 754 C 755 756 C 757 758 C 759	CEA4R7M35LS CEALNP4R7M16 CKSQYB102K50 CEA100M16LS2 CEA221M10L2	----- ----- ----- ----- -----	CEA4R7M35LS CEALNP4R7M16 CKSQYB102K50 CEA100M16LS2 CEA221M10L2
C 760 C 761 C 762 C 851 852 C 853	CEA100M16LS2 CKSQYB102K50 CEA220M16LS CEA4R7M35LS CEA220M16LS	----- ----- ----- ----- -----	CEA100M16LS2 CKSQYB102K50 CEA220M16LS ----- -----

Service Manual

**ORDER NO.
CRT 1094**

CASSETTE MECHANISM ASSEMBLY

CX-166

- This service manual is for cassette mechanism assembly used in car stereo components.
- Refer to the service manual for individual models for details on sections other than the cassette mechanism assembly.

	Model	Service Manual	Model	Service Manual
With music search	KE-3050/ES	CRT1088		
	KE-3080/EW			
	KE-3080SDK/WG			
	KE-3050QR/UC	CRT1089		

	Model	Service manual	Model	Service Manual
Without music search	KP-3120/EW, ES	CRT1085	KP-4440/UC, ES	CRT1092
	KP-3130/EW		KP-5011/US	
	KP-3120SDK/WG		KP-5550/UC, ES	
	KPH-4120/EW, ES	CRT1086		
	KPH-4130/EW			
	KPH-4120SDK/WG			
	KE-3020/ES	CRT1087		
	KE-3030/EW			
	KE-3030SDK/WG			
	KE-2222/UC, ES	CRT1090		
	KE-2515/US			
	KE-3011/US			
	KE-3232/UC, ES			

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 TEL: (03) 580-9911

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1. DISASSEMBLY

Note: Always use new washer and E-washer at the time of reassembling.

● Dismounting the Cassette Holder (Fig. 1)

- (1) Make the claw straight.
- (2) Remove the spring.
- (3) The cassette holder is gripped at 2 points, shown by arrows. So, shift it toward the left and pull it out from above.

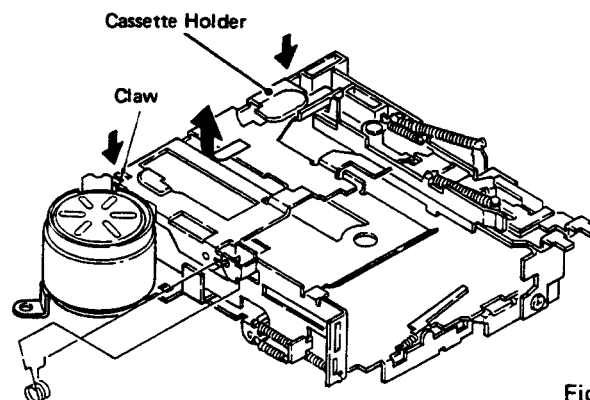


Fig. 1

● Dismounting the Reel Unit (Fig. 2)

- (1) Take off the washer.
- (2) Remove the reel unit.

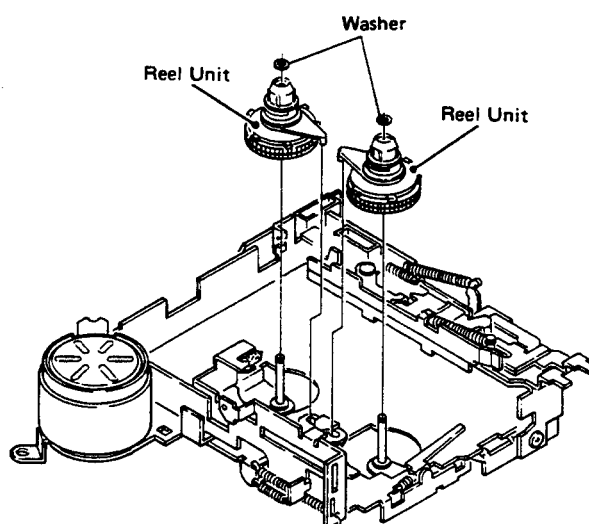


Fig. 2

● Dismounting the Flywheels (Fig. 3)

- (1) Take off the E-washer. Retain washer properly to ensure it doesn't get lost.
- (2) Remove the flywheels. Do not mistake the N and R flywheels (otherwise tape speed would change).

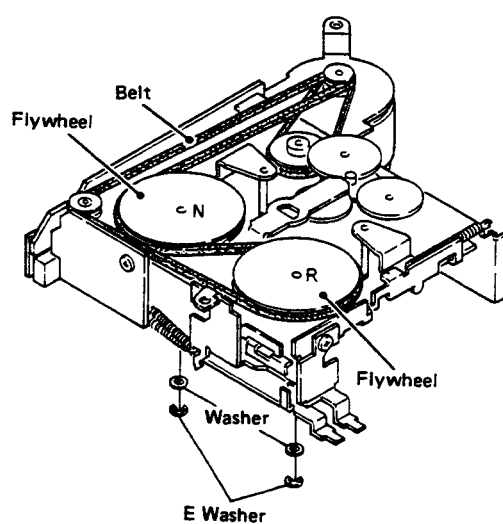


Fig. 3

● Dismounting the Head (Fig. 4, 5)

- (1) Remove the P.C. board unit, after taking off its fastening screw.

Note: Take care not to change the setting of FWD/REV switch of P.C. board.

- (2) Remove the 3 springs.
- (3) Take off E-washer.
- (4) Remove the lever unit (EJ).

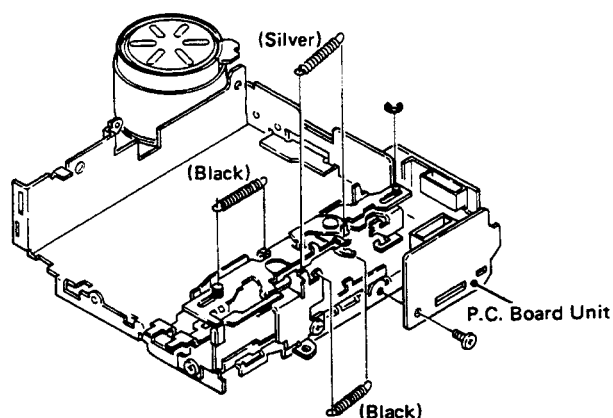


Fig. 4

- (5) Take off the lever (FF). When reassembling, make sure that the spring comes in front of arm unit.
- (6) Take off lever (REW).
- (7) Remove the head after taking off its 2 retaining screws.

Note: The head can be dismantled, even without taking off the levers given in above steps (5) & (6).

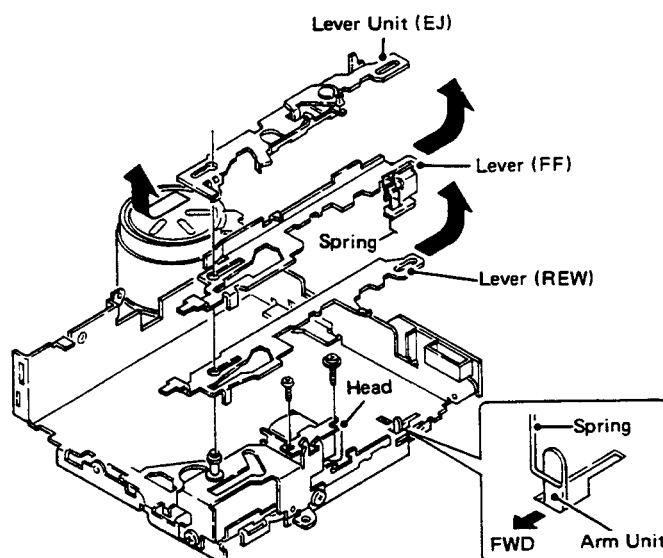


Fig. 5

● Dismounting the FWD Pinch Roller (Fig. 6)

- (1) Remove E-washer & spring, and then take off the FWD pinch roller.

● Dismounting the REV Pinch Roller (Fig. 6)

- (1) Remove the 2 retaining screws, and then take off the bracket unit, taking care not to hit against the protrusion.
- (2) Take off E-washer & spring, and remove the REV pinch roller.

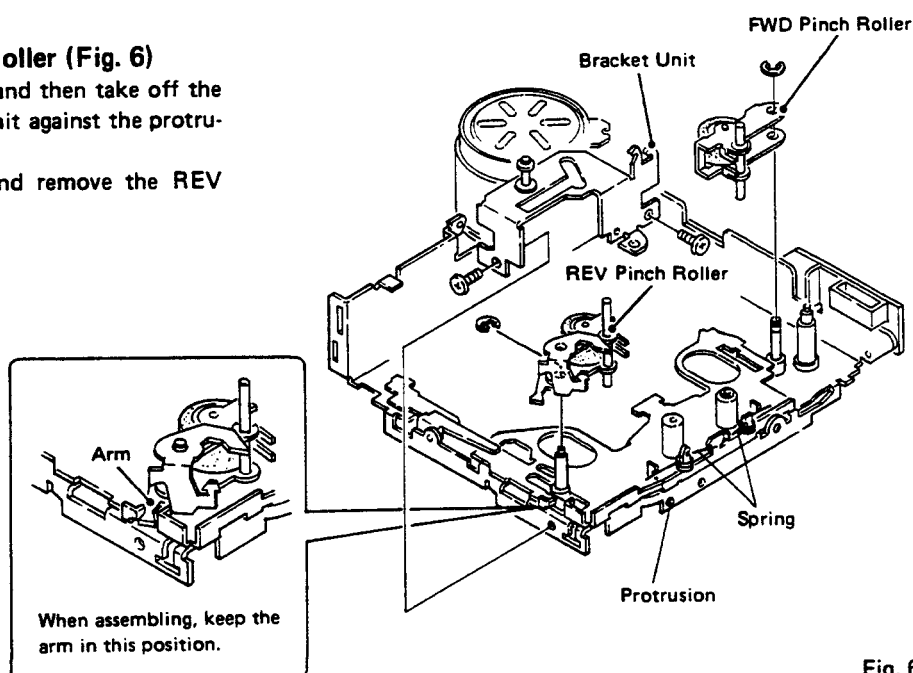


Fig. 6

2. MECHANISM DESCRIPTION

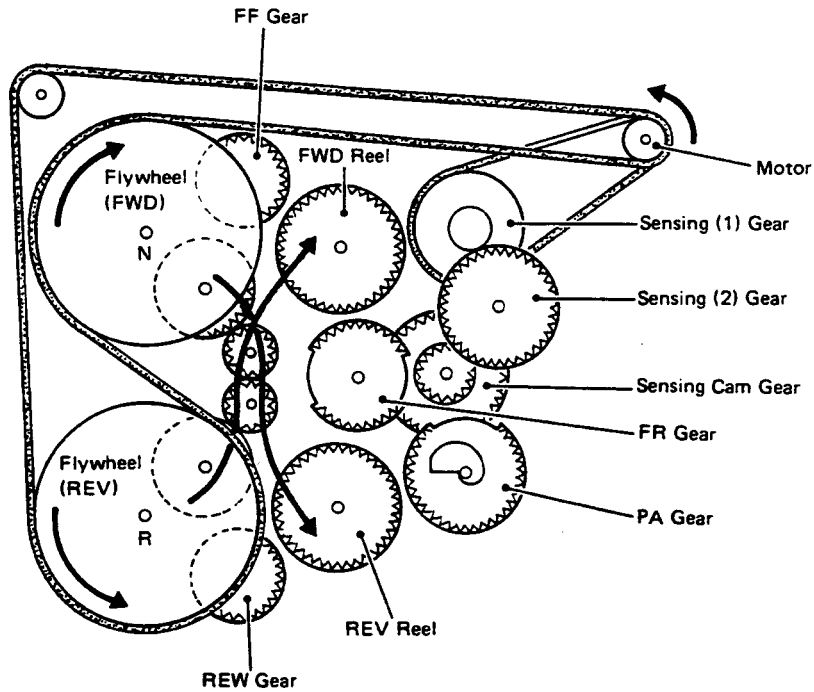


Fig. 7 Transmission of turning force at the time of PLAY (Flywheel → Reel)

● Loading & Playing the Cassette Tape

(1) When a cassette tape is inserted, a lever pushes against an arm, which then turns ON the motor and tape/tuner (tape side) switches, in this given order.

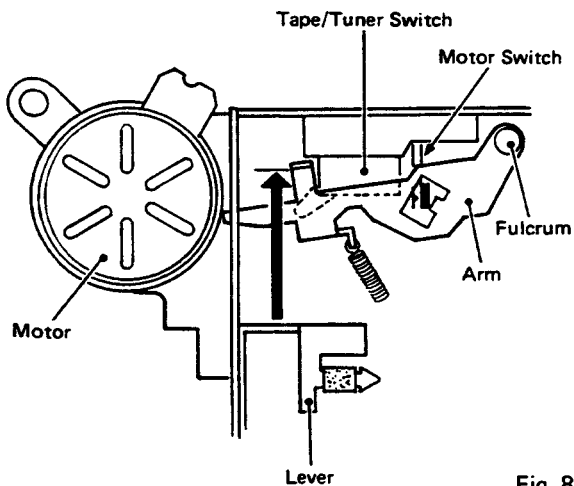


Fig. 8

(2) When a cassette tape is set, the arm of Fig. 9 (collision preventing) gets depressed, putting the head base in forward movable state.

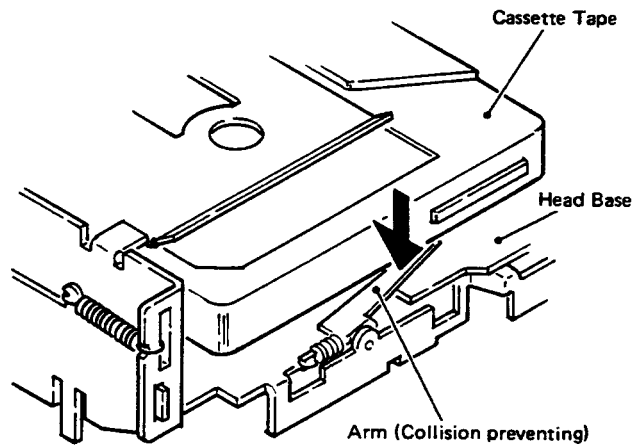


Fig. 9

- (3) As motor switch turns ON, the motor starts running, transmitting its rotations toward the arrow direction shown in the Fig. 10. As a result, flywheel (FWD) runs forward and flywheel (REV) runs backward.
- (4) REW gear then transmits the rotations of flywheel (REV) to REV reel, putting the mechanism in REW state and eliminating tape slackening (ATSC). At this time, the FWD reel is locked by the ratchet mentioned in step (14).

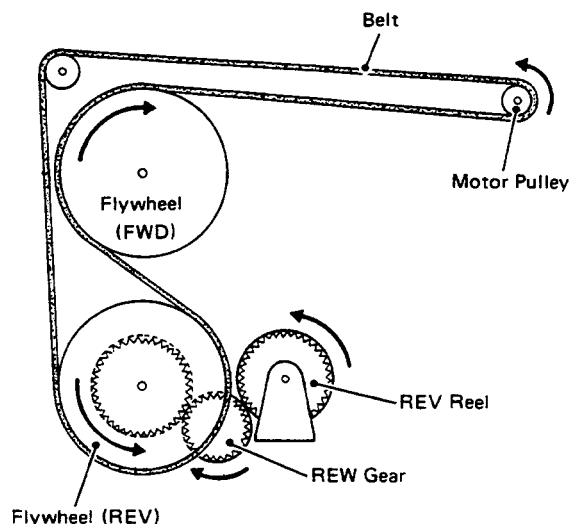


Fig. 10

- (5) In Fig. 11, the reel arms of FWD & REV reels are engaged on the sensing arm. A slight friction causes the reel arms to get locked onto the reels. While REV reel is rotating, the reel arms and sensing lever keep shifting laterally along the arrow direction ① of Fig. 11. Right side movement of the reel arm is caused by the rotation of REV reel; while the left side movement is caused by protrusion of the sensing lever through the inner groove of sensing cam gear.

- (6) REV reel stops as soon as tape slackening is eliminated (the gear of reel is driven by REW gear).
- (7) As soon as the reel stops, the operation of above step (5) sends the reel arm toward the left. Consequently, the protrusion of sensing lever moves along the orbit of dotted line, causing the sensing lever to get pushed by cam and move along arrow ②.
- (8) Sensing lever turns the ATSC lock arm along the direction of arrow ③.

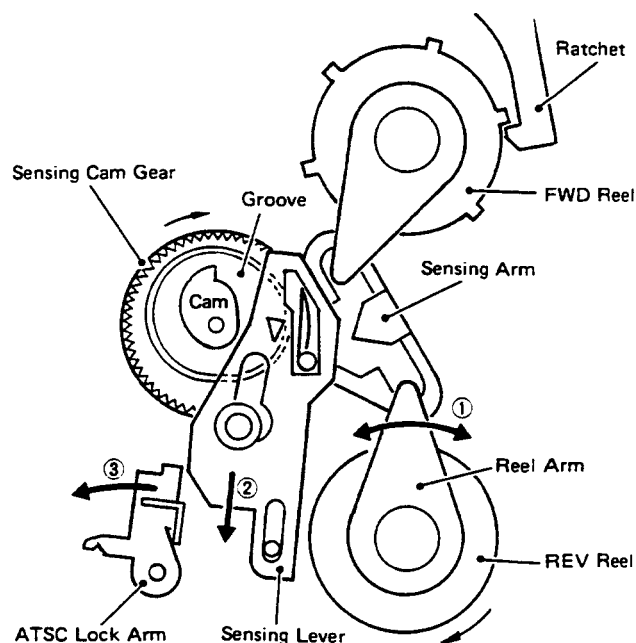
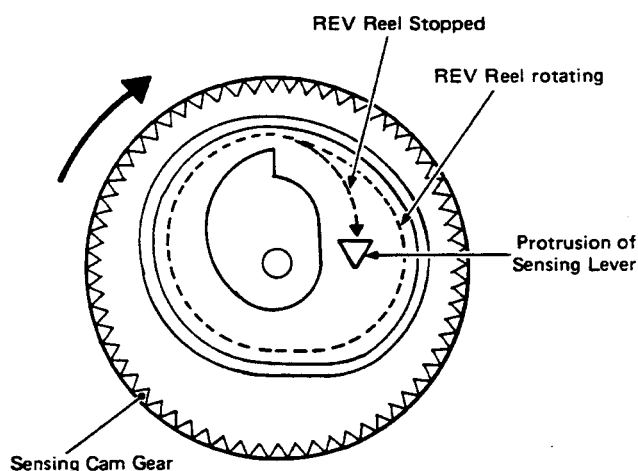


Fig. 11

- (9) In ejected state, PA gear remains locked by ATSC lock arm, as shown in Fig. 13. The force along arrow ③ caused by the operation of above step (8), releases the lock if PA gear, whereupon the PA gear is made to rotate slightly along arrow ④ by the gear driving spring. As a result, the PA gear engages with sensing cam gear, and proceeds to turn through 1 more rotation. The cam of PA gear then causes the HD drawing arm and key-off lock arm to move along arrow ⑤. The HD drawing arm pushes against a lever, and a spring attached to the lever causes the head base to shift along arrow ⑥

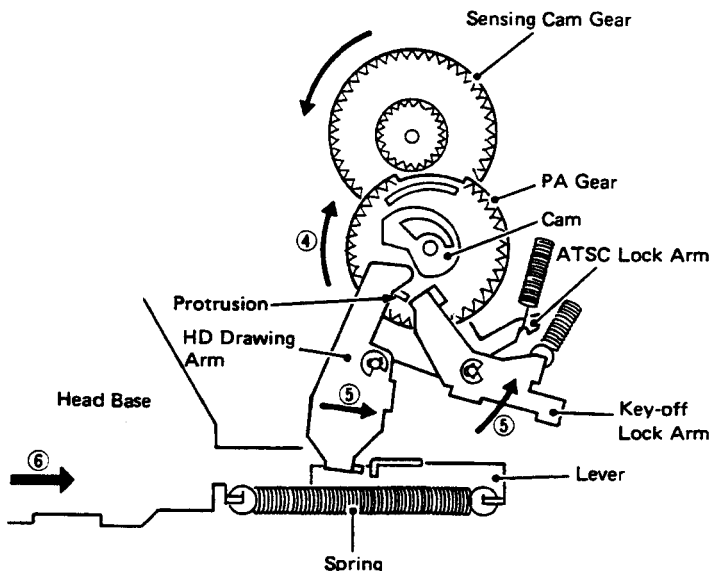


Fig. 12

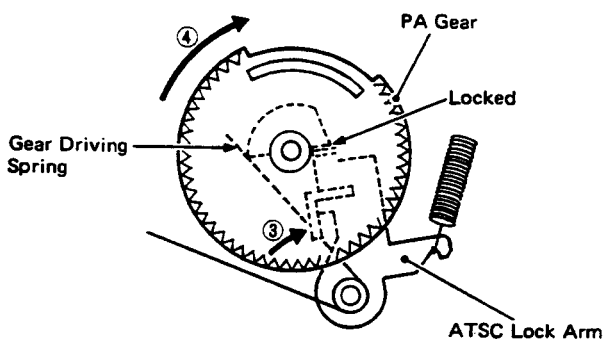


Fig. 13

- (10) With Music Search (MS) (Fig. 14)

The key-off lock arm is pushed toward the outer periphery of PA gear by its cam. As a result, the key-off lock lever shifts along the direction of arrow ⑦, and the tip of solenoid attached at the end of lock lever is pulled in and gets locked into the solenoid (the solenoid is turned by motor switch).

Without MS (Fig. 15)

The key-off lock arm is pushed toward the outer periphery of PA gear.

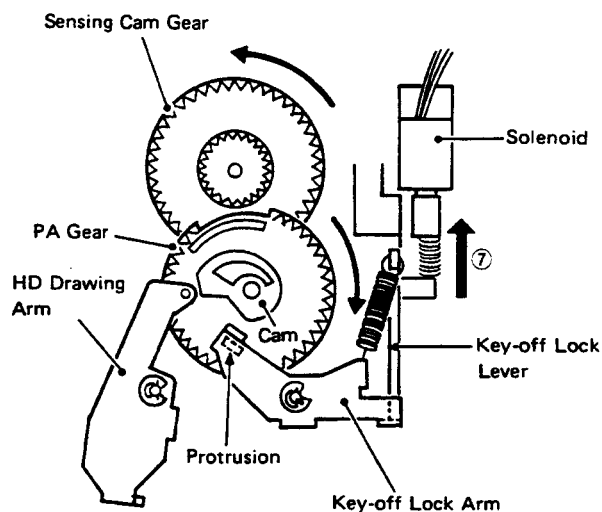


Fig. 14 Stopped state after turning through about 1 rotation (with MS)

- (11) The key-off lock arm engages on the protrusion of PA gear, and concurrently the turning force of sensing cam gear is lost at the no-teeth part PA gear, causing the PA gear to halt.

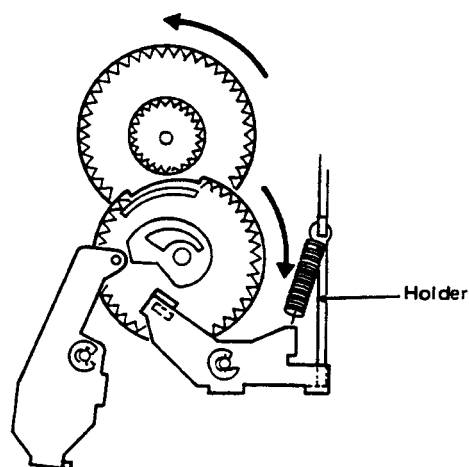


Fig. 15 Stopped state after turning through about 1 rotation (without MS)

- (12) Through a lever & spring, the HD drawing arm causes the head base to shift along the direction of arrow ⑥, in turn drawing out the HD. This movement of head base is accompanied by the following operation.
- (13) The spring A attached to head base causes the pinch roller to begin movement.
- (14) Point A of head base shifts the ratchet along arrow direction ⑧, causing the FWD reel to get detached from it.
- (15) As the FWD pinch roller runs forward, arm A moves along the direction of arrow ⑨, causing arm B to get locked on FWD reel.

- (16) Point C of head base pushes against the pin of REW gear, disengaging the REW gear from REV reel.
- (17) Point B of head base pushes arm B along arrow direction ⑩, making the FWD reel free.
- (18) Spring A causes either the FWD or REV pinch roller to contact the capstan, depending on the existing status (FWD PLAY or REV PLAY) before the mechanism came to halt.
- (19) As point D of head base pushes against arm unit (idler), the play gear engages onto either the FWD or REV reel, depending on the existing status before the mechanism to halt.

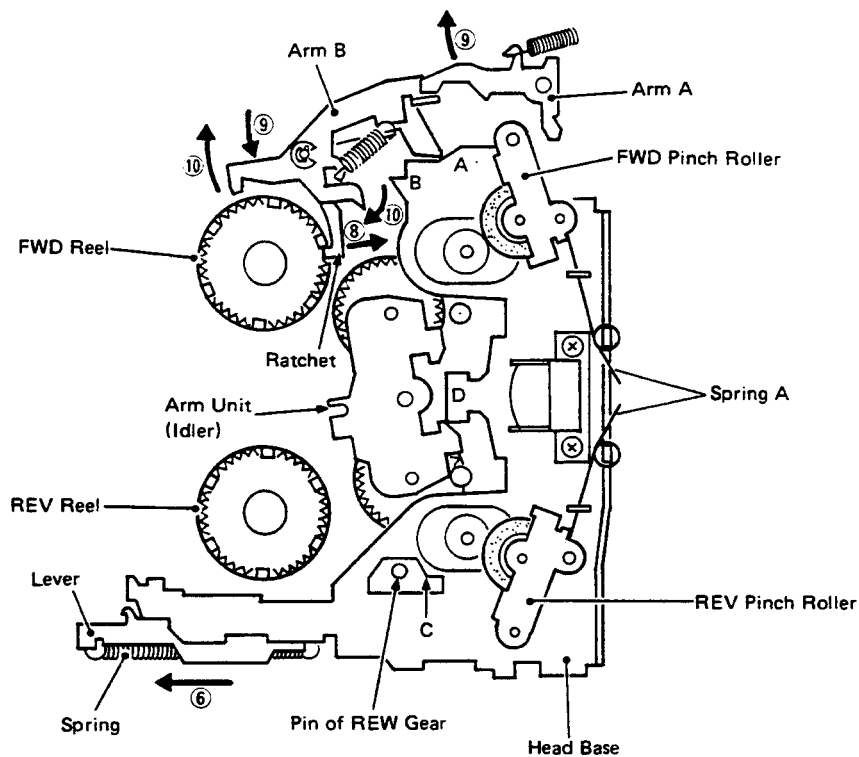


Fig. 16

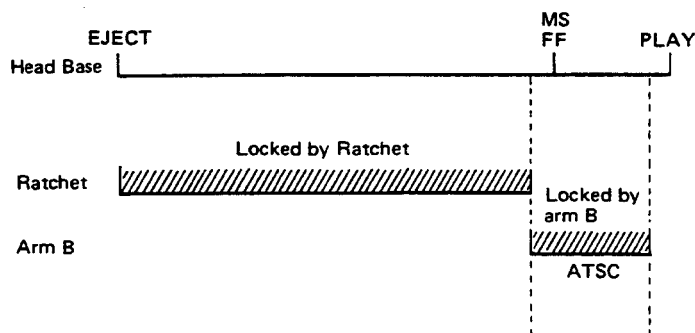


Fig. 17 FWD Reel locking timing

● Sensing Operation (Fig. 18, 19, 20)

○ Auto

1. While playing, since the sensing lever shifts laterally as given in above step (5), the cam of sensing cam gear never pushes against the sensing lever. Upon reaching the end of tape, the cam pushes against sensing lever, and point E goes in to push the arm along arrow direction ⑪.
2. The arm contacts the stopper of FR gear to stop the gear from running. Since the FR gear receives the force along arrow direction ⑫ of spring A, through REV pinch roller & arm (FR), it always tends to rotate along arrow direction ⑬.
3. As soon as the arm disengages from stopper in above step 1, the FR gear engages with sensing cam gear, causing the arm to rotate until contacting the opposite side stopper.

4. The rotation of FR gear sends the arm (FR) toward arrow direction ⑭, in turn switching over the pinch rollers. This switch over is done by the movement of arm (FR), including that of the arm unit (idler) also.

○ Manual

1. When the manual direction switch over lever of Fig. 18 is pushed, the arm moves along arrow direction ⑪. Further operation is identical to that in auto.
2. If the manual direction switch over lever is held pushed, the inner protrusion of FR gear as shown in Fig. 19 contacts spring B of the arm, and stops after turning through half rotation.

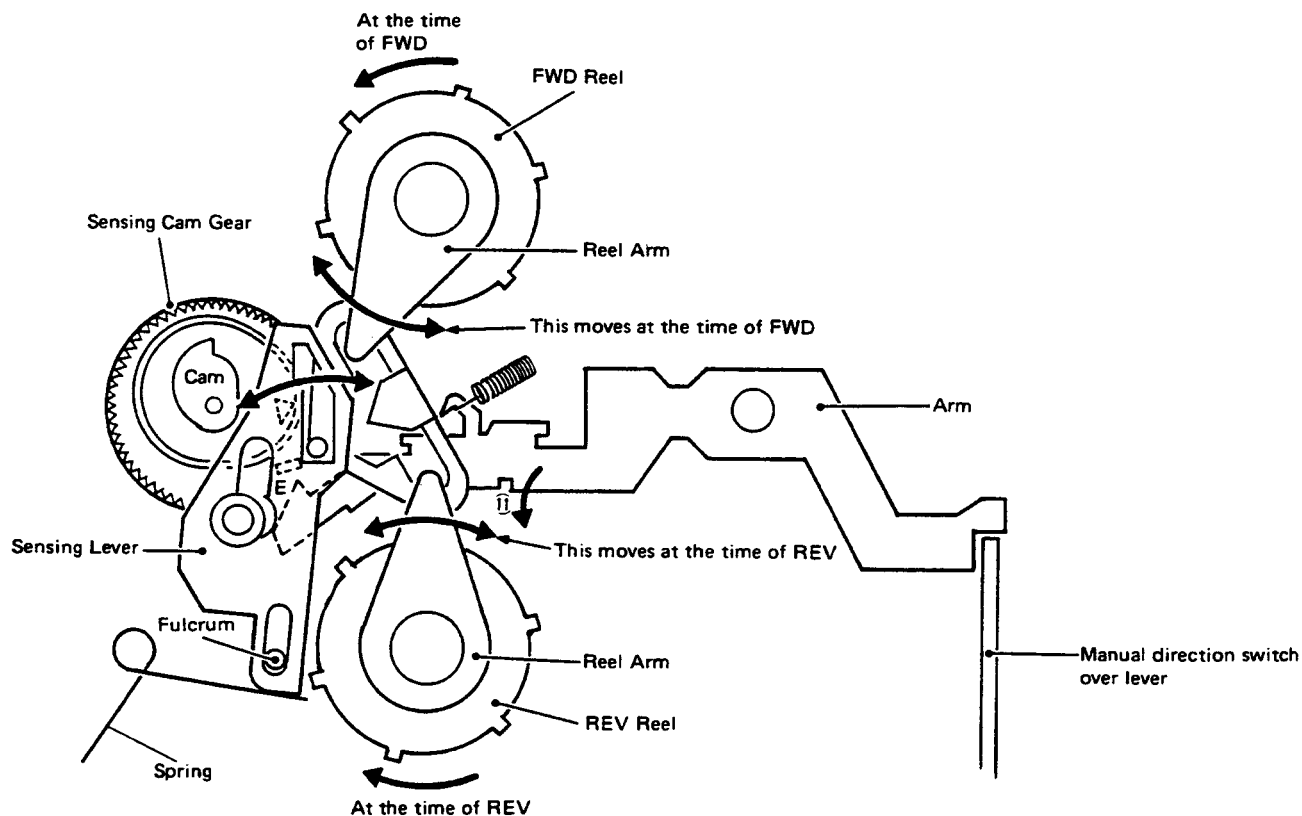


Fig. 18

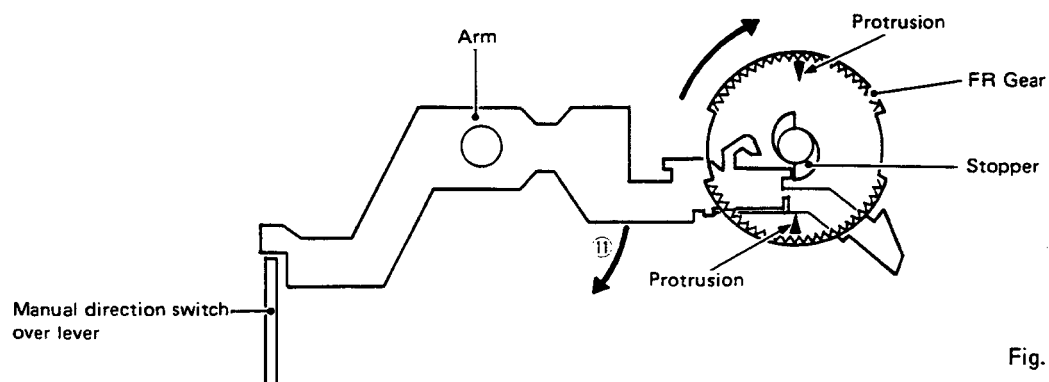


Fig. 19

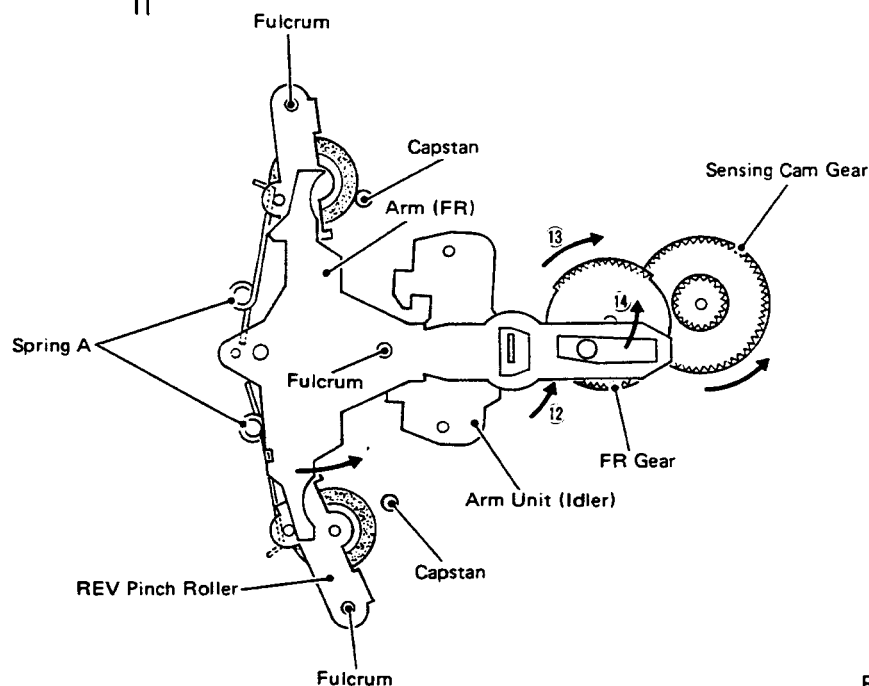


Fig. 20

● Sensing release Mechanism (when drawing out the Head)

1. If the sensing lever is held pushed by sensing cam gear until the head is drawn out, after the lock of PA gear has been released by it, FWD/REV switch over takes place.
2. To prevent this, the arm (sensing released) is held pushed toward arrow direction, by the cam of PA gear, through ATSC lock arm, as shown in Fig. 21. This prevents FWD/REV switch over by keeping the cam of sensing cam gear away from the sensing lever.

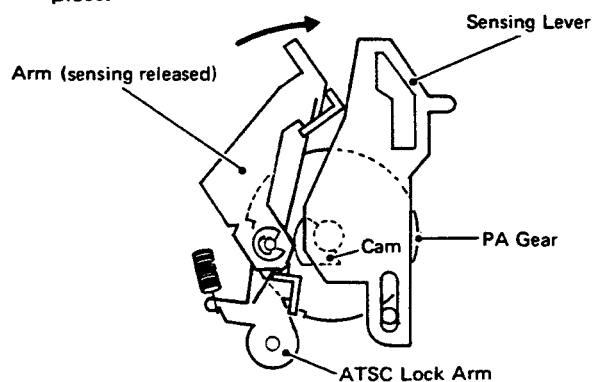


Fig. 21 Drawing out the HD (Sensing released)

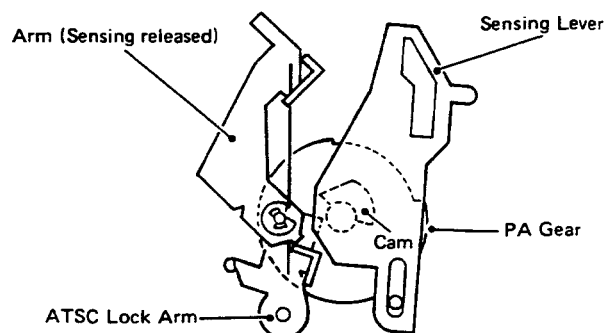


Fig. 22 At the time of PLAY (Sensing operation)

● FF/REW Mechanism (when running FWD)

1. When FF, REW lever is pushed, arm D causes the head base to return upto FF/REW position. The lever makes arm C to rotate along arrow direction ⑫, which then turns ON the mute switch. When pushed further, it gets locked by arm C.
2. The returning of head base also causes the arm unit (idler) to return, and the play gear is detached from the reel.
3. When REW lever is pushed, the head base returns, causing the pin of REW gear also to return to original position, whereby the flywheel (REV), REW gear, and REV reel get engaged together, instating REW mode.
4. When FF lever is pushed, the arm unit (FF) gets pressed, causing the flywheel (FWD), FWD reel, and FF gear to get engaged, again instating FF mode. At this time, REW gear detaches from REV reel and flywheel (REV) due to spring tension.
5. At the time of MS operation, the solenoid turns from OFF to ON while in FF/REW state, and play mode is instated as the head base in returned.

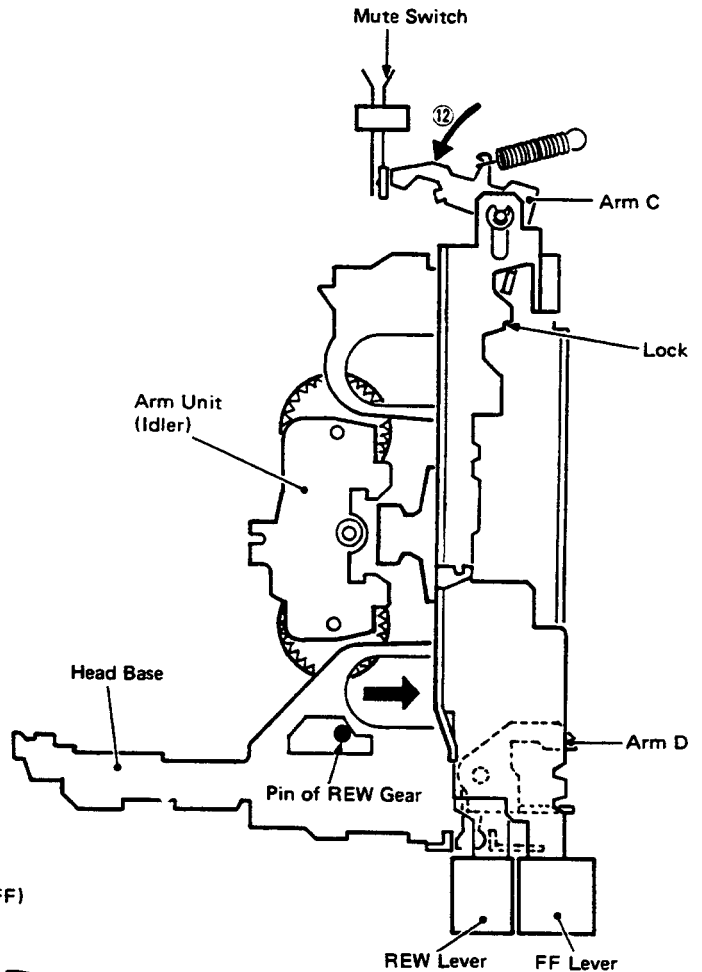


Fig. 23

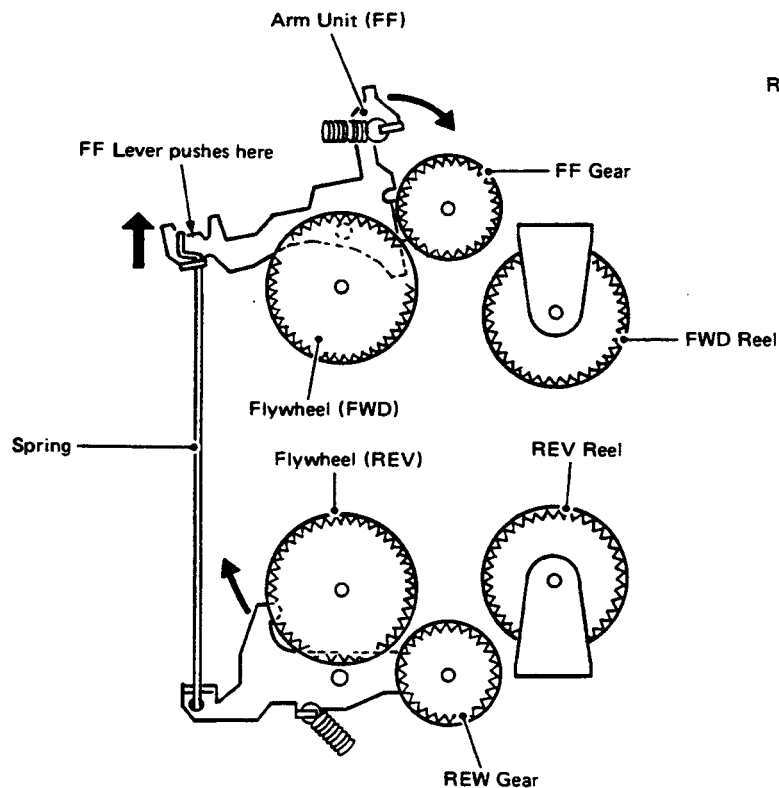


Fig. 24 At the time of FF

● EJECT

1. If FF, REW levers are concurrently pushed, the arm gets caught at point F, sending the lever toward arrow direction.
2. Point G pushes against the arm of Fig. 23, causing the head base to return back.
3. As the head base returns, arm E of Fig. 26 moves along arrow direction ⑬, in turn pushing the key-off lock arm. Thereby, the lock of PA gear gets released, and play state is cancelled.
4. Point H of the lever of Fig. 25 pushes against the cassette holder to eject the cassette tape.

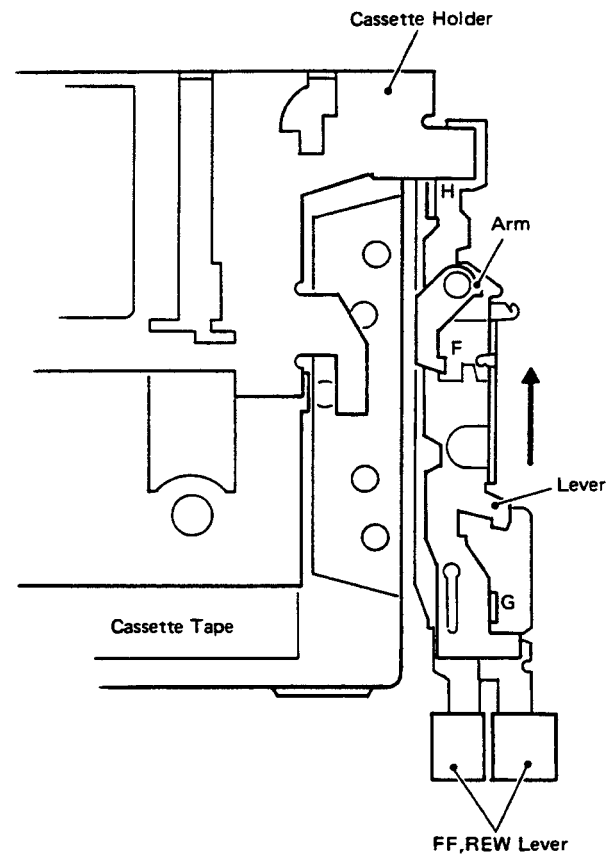


Fig. 25

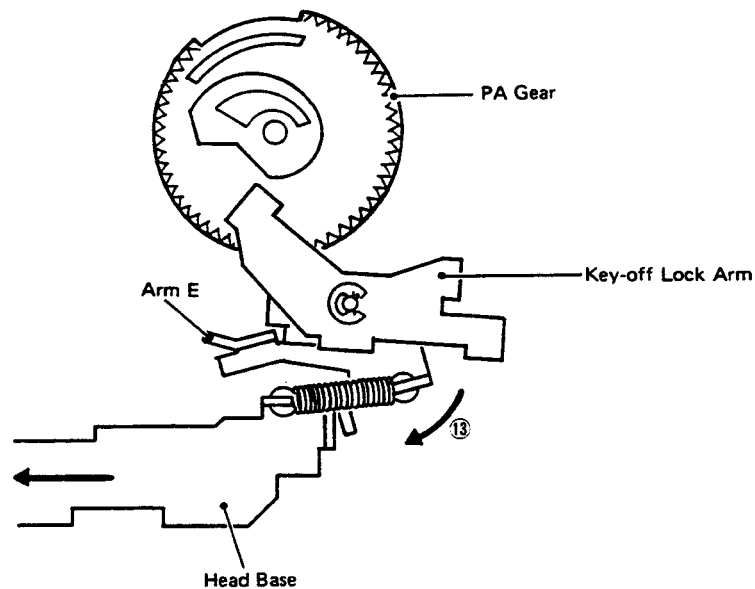


Fig. 26

3. ADJUSTMENT

3.1 AZIMUTH ADJUSTMENT (Fig. 27)

- To Adjust

1. Play "A" side of STD-341A (10kHz, -20dB). Adjust each screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

3.2 TAPE SPEED ADJUSTMENT (Fig. 27)

- To Adjust

1. Reproduce STD-301 (3kHz, -10dB). Adjust the semi-fixed resistor so that the frequency counter shows 3,010Hz (+30Hz, -30Hz).

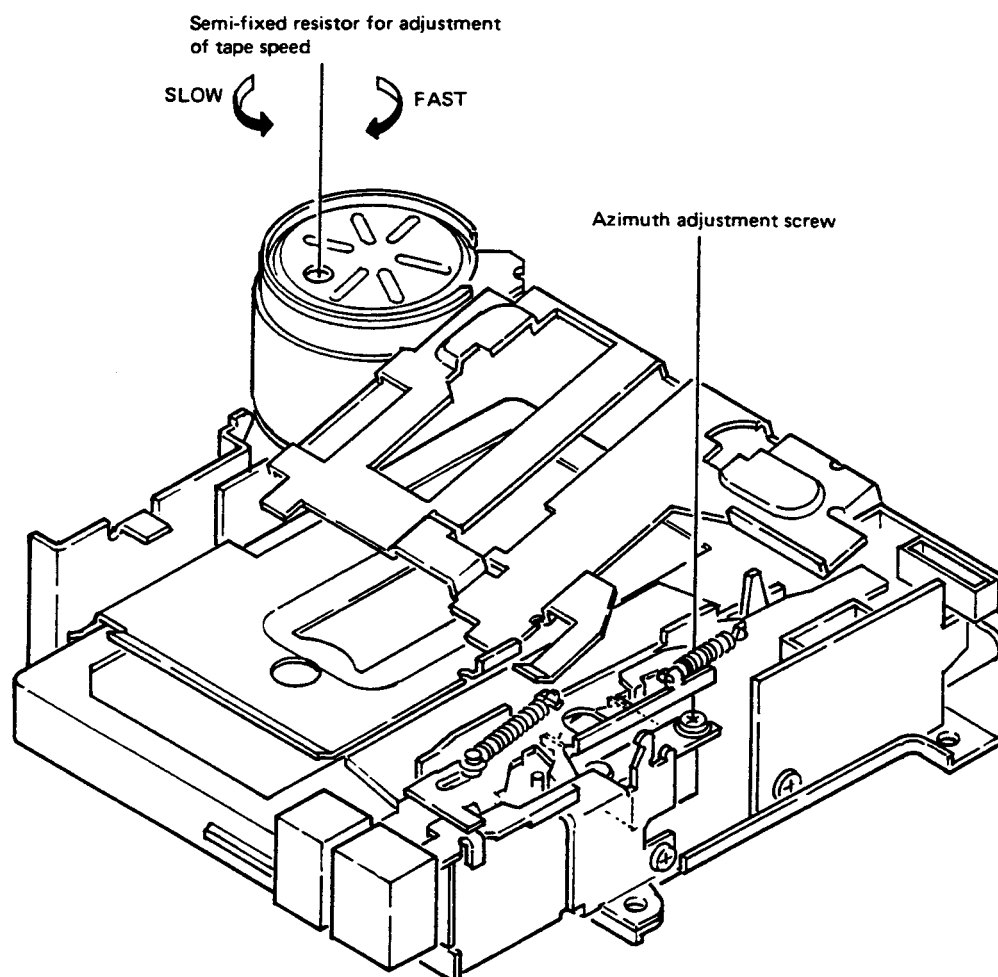

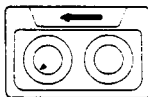
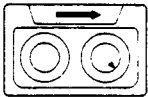
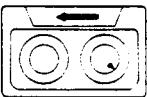


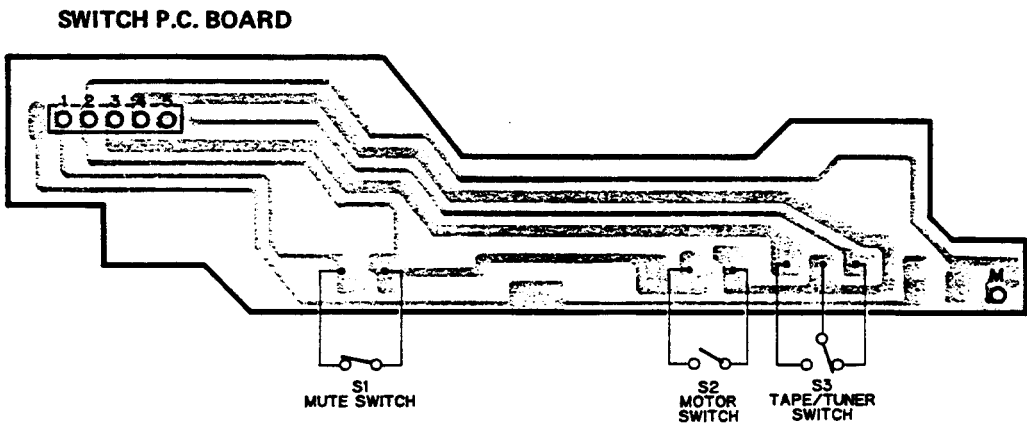
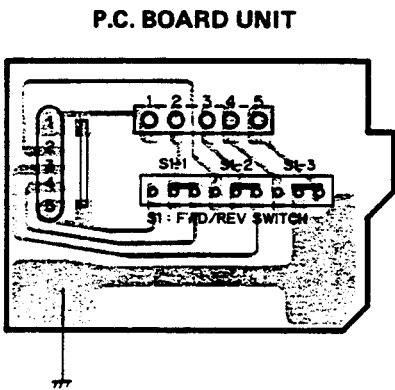
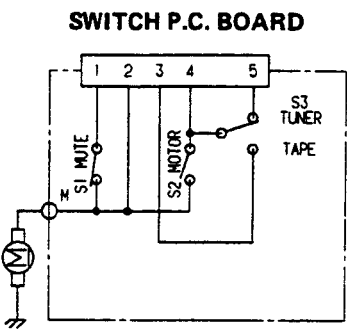
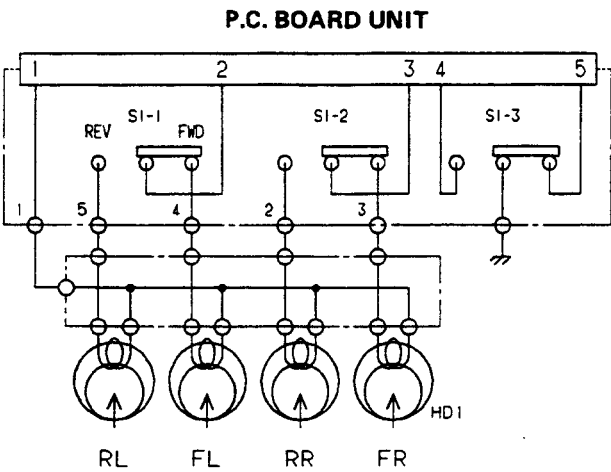
Fig. 27

3.3 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<p>■ Tape speed deviation: $3,000 \begin{smallmatrix} +90 \\ -30 \end{smallmatrix} \text{ Hz}$ $(4.76 \text{ cm/s} \begin{smallmatrix} +3 \\ -1 \end{smallmatrix} \%)$</p> <p>Using an STD-301, measure the speed at the start and end of winding and take the maximum value. Measuring time shall be 5 ~ 6 seconds.</p>	<p>■ Wow and flutter: Less than 0.20% (WRMS)</p> <p>Using an STD-301, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 ~ 6 seconds.</p>
<p>■ Fast forward and rewinding time: 95~115 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: 39~65g·cm</p>  <p>Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 5 ~ 6 seconds.</p>	<p>■ F.F. torque: 110~70g·cm</p>  <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: 110~70g·cm</p>  <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: 2~6g·cm</p>  <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<p>■ Cassette loading force: Less than 1.5kg</p> <p>Push the center of the cassette and measure the force with a tension meter (3 kg).</p>
<p>■ Eject force: Less than 4kg</p> <p>Using a tension meter (5 kg), measure eject force from play mode to point at which cassette is ejected.</p>		

4. CIRCUIT DIAGRAM & PATTERNS

- Without MS



- With MS

